SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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vention of Colliery Accidents.

Mr. HERMON'S PRIZE ESSAYS.

ILLIAM GALLOWAY'S FIRST PRIZE ESSAY—No. I.

N THE OCCURRENCE AND PROPERTIES OF FIRE-DAMP.

damp is found issuing from the fissures of coal seams and ta associated with them, the quantity emitted varying con- y according to the nature of the coal and the depth of the om the surface.

e workings of a coal mine the greatest quantity of gas is d from the fresh surfaces which are exposed as the coal is d at the faces in the "solid." Some gas, however, is also ff in the "broken" and in "goaves," being conveyed thither es in the roof or floor, which act as pipes or channels from d coal of the working seam, or from an upper or lower bed . In general the quantity issuing from the solid coal, or he roof and floor of the mine, does not vary much where sion of the gas is considerable; but in collieries in which the are wide, and the tension of the gas is not great, its rate of epends on the pressure of the atmosphere.

wers" are unusually large fissures, which extend for consider- tances in the coal field, and penetrate the strata both above low the working seam. They sometimes give off a large ty of gas when first "pricked," and some of them continue to s for years. They are generally met with in the neighbour- f faults. Eruptions of fire-damp are not uncommon in some gas in a state of great tension appears to collect in a cavity d by the bending down of the roof or the heaving up of the nd to escape suddenly when a rent is formed, or a fall of roof place. Instances are also recorded of eruptions of gas from s filled with "danty" or disintegrated coal.

he year 1815, Sir Humphry Davy, who was at that time en- in making the experiments which led to the invention of the -lamp, pointed out that light carburetted hydrogen was the al constituent of fire-damp. Since then many specimens ed from "blowers" have been analysed; they are generally to contain 80 to 90 per cent. of light carburetted hydrogen, g proportions of oxygen and nitrogen, and sometimes a little ic acid gas. Light carburetted hydrogen is also known by me of marsh gas, from the fact that it rises in bubbles to the e of water under which organic substances are decomposing. ymbol for this gas is CH_4, molecular weight, 16; (carbon) 2, (hydrogen) $H_4 = 4$, $CH_4 = 2$ volumes.* A molecule of light retted hydrogen requires two molecules of oxygen for its com- combustion.

$$\underset{2\text{ vols.}}{CH_4} + \underset{4\text{ vols.}}{2\,O_2} = \underset{2\text{ vols.}}{CO_2} + \underset{4\text{ vols.}}{2\,(H_2O)}$$

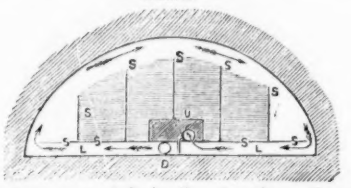
measure requires two measures of oxygen, or ten measures mospheric air. When the air and gas are mixed in certain pro- ns their combustion takes place with explosion. With five res of air to one of gas the explosion is weak; with from to ten of air to one of gas it is most violent, and with fourteen to one of gas the mixture still explodes. But when the pro- n of air by measure is less than three or four, or more than en, to one of gas the mixture will not ignite at the ordinary re and temperature. The composition of the after-damp de- on the proportion of air that was in the mixture before ex- n. When there have been ten measures of air to one of gas sidual gases are one measure of carbonic acid, two of steam, ight of nitrogen; and, after the steam has condensed, the after- occupies nine-tenths of the original volume. It is, therefore, nt that there is no oxygen left in this or any after-damp which en formed by the explosion of a mixture containing less than easures of air to one of gas. However, when there are four measures of air to one of gas, the after-damp is composed of easures of oxygen, 2 of carbonic acid, and 11 1-5 of nitrogen the steam has condensed. This last mixture is not imme- y fatal, and may support life for a short time after the car- acid has been removed.

ious methods have been proposed whereby it might be possible metrate the after-damp, such as the removal of the carbonic by the use of quick-lime or ammonia and other alkalies; but, the composition of the after-damp depends on the proportions and gas in the mixture before explosion, it would not in some be able to support life under any circumstances. The method oyed for detecting the presence of fire-damp in the air of a mine no means a satisfactory one, since a less quantity than three- -half to four per cent. of gas gives not the slightest "cap" on ame of a lamp or candle, and it must be remembered that seven ent. makes the mixture explosive. There is, therefore, only a n of little over three per cent. between air that shows the first ation of containing fire-damp and air that will explode. An ument was described some years ago,† by the aid of which it aid as little as one per cent. of fire-damp could be perceived; a contrivance would be of much value in testing the ventilating nts, the fouling of which, even to the extent of one or two per of gas, must in many cases lead to the formation of explosive ures in places in which they had not been seen before.

II.—FOULING OF THE VENTILATING CURRENTS.

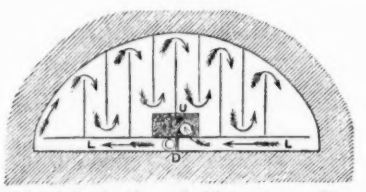
fore the year 1760 only one system of ventilating the workings known or employed. It has been called the "Primitive od." The air from the downcast shaft is led in a single current d the edge of the solid coal and working faces, until it returns e upcast. Let Fig. 1 represent the general features of a post tall working. The solid coal is shaded from right to left here n the other figures. D is the downcast, and U is the upcast A door is interposed between the two shafts, and the air is to circulate round the edge of the solid coal, as shown by the ws. The lines s s are stoppings arranged so as to prevent the air taking a short course. The shading parallel to the level L L s an unventilated space round which the air current travels. his system it was possible to obtain plenty of fresh air at the king faces; indeed, it is the only method adopted at the present day in many collieries, in which the emission of fire-damp is insignificant, and in these cases it is quite sufficient. But in fiery mines it was found that dangerous accumulations of air and fire-damp were formed in the unventilated space when large districts of pillars were barred off from the ventilating current in this

FIG. 1.



manner. Apertures were left in the stoppings, through which it was intended that air should be driven by the movements of the men and horses, and in this way a partial ventilation was effected. This was called "airing by the waft of the barrowmen." Under this system sudden and unexpected explosions took place,* and it is not improbable that two very disastrous explosions which happened in our own day† are traceable to the existence of a large space of barred off pillar workings, round which the air circulated on the outside. In 1760, Mr. Spedding of Whitehaven, introduced the method known as "coursing the air."‡ This system was intended to obviate the dangers arising from the former. By means of suitably arranged stoppings the ventilating current was made to travel up and down among the pillars, so that it reached every part of the workings. The lines in Fig. 2 show how the stoppings were arranged, and the arrows indicate the course of the air. But a new source of danger

FIG. 2.



accompanied the introduction of this system. It was no longer possible, certainly, for large accumulations of explosive mixture to be formed among the pillars, but the distance to be travelled by the air was materially increased; and, in order that the same quantity as formerly might be supplied to the workings, its velocity would require to increase at the same rate. Now, it is generally accepted as an approximation that the resistance to the circulation of the air in the passages of a mine varies as the square of the velocity, and if we assume this rate of variation, we find that the power required to make the air circulate varies as the cube of the velocity. For let v = velocity, r = resistance, c = a constant, P = the ventilating power. Then since

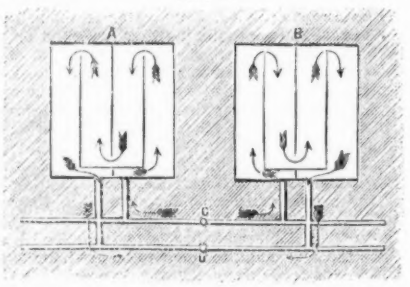
$$r \propto v^2$$
$$\therefore r = cv^2$$
$$\text{But } P = vr = vcv^2 = cv^3$$
$$\therefore P \propto v^3.$$

It soon appeared that the same ventilating power was no longer able to cope with the new order of things, and the air was occasionally so loaded with fire-damp when it reached the upcast shaft that it ignited at the ventilating furnace.

The steel mill and the "dumb furnace" were then resorted to. By the arrangement called the dumb furnace, or dumb drift, the air returning from the workings is sent directly into the upcast shaft without passing over the furnace; and the furnace is supplied with fresh air, which, on being heated, passes into the shaft and mixes with the air returning from the workings. It was found, however, that explosions still took place, even in mines in which the steel mill only was used for giving light. At length it was discovered that *sparks from the mill* could ignite the inflammable air, but there appeared to be no remedy.

Affairs were in this unsatisfactary state when Mr. Buddle began his career. That indefatigable pitman, who may appropriately be called πολυμηχαν, introduced his system of panel-work and double ventilation at Wallsend in 1810. The general features of panel work and double ventilation are shown in Fig. 3. A and B are districts in which workings are being carried on; they are separated from each other by a barrier of solid coal. Each district communicates

FIG. 3.

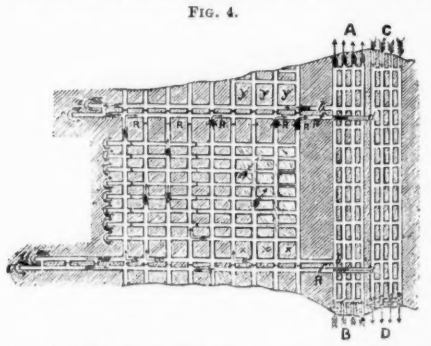


with the upcast and downcast shaft by means of two passages, one being used as the intake, and the other as the return air course. At the bottom of the downcast shaft the air current divides itself, one portion going to the district A, the other to B. The stoppings which guide the air are indicated by lines as before. After ventilating its district each current returns to the upcast shaft, through which they ascend to the surface together. Panel work was introduced partly for the purpose of preventing the spread of "creeps" during the working out of the pillars, partly for the purpose of confining the results of an explosion to the district in which it happened. In the system of double ventilation the true secret of ventilating mines was discovered.* Two currents of air were used to ventilate the same space that was formerly ventilated by one. In order, then, that the same aggregate quantity of air might be supplied to the workings, each current required to travel at only half the velocity of the single current, and that part of the power which was necessarily expended in overcoming friction was reduced to one-eighth of its former value.

To the late Mr. Nicholas Wood, of Hetton Collieries, Durham, is due the credit of having fully appreciated and successfully applied the principles of this system to the ventilation of the collieries under his care. Very large quantities of air are thus obtained at the Hetton Collieries—upwards of 40 times as much as Mr. Buddle was using at Wallsend (5000 cubic feet per minute) when the great explosion took place in 1835.

Fig. 4 shows the application of this system to a district of pillar and stall workings; A B and C D are the main intake and return air courses; *a b* and *c d* the district intake and return air-courses; the

FIG. 4.



stoppings are indicated by double lines; R R are regulators; the part from which pillars have been removed is shaded irregularly. The air leaving the advance drifts *a* and *c*, and that from the working faces in the solid coal goes directly into the return air-course; the pillar workings and the goaf, on the other hand, are supplied with fresh air. The district return air-course, *c d*, is cut in the roof from *f* to *d* at a short distance above the main intake, so that the main return air-course is completely isolated. In this sketch each main air-course is shown to consist of four passages, their frictional resistance, therefore, to the passage of a given quantity of air is only one-sixteenth of what it would be if each of them consisted of one passage, and the power required to overcome the friction is only one sixty-fourth. These remarks are sufficient to show how much more important it is to multipiy the number of the airways, increase their area, and shorten the distance to be traversed by each ventilating current, than to increase the ventilating power, when a greater quantity of air is required for the ventilation of any mine.

[*To be continued in next week's Journal.*]

* A volume is 11·2 litres = 683·503 cubic inches.

† "Transactions North of England Institute of Mining Engineers," vol. XV.

* Buddle, Parliamentary Evidence, 1835.

† Nixhill, 1850; Talk o'-th'-Hill, 1866.

‡ For an early description of this method (1778) see article 'Coalery,' "Encyclopædia Britannica."

* Short distance, or great area of air-ways.

Original Correspondence.

PATENT STAMPS AT NEW DOLCOATH.

SIR,—In regard to your report of the New Dolcoath meeting, in the Supplement to the Journal of Aug. 23, and the statements therein made by Mr. Vivian as to the results of our Patent Ore Crusher, we wish to make the following remarks:—Mr. Vivian stated at the meeting that "exactly the same size of grating as that used at South Condurrow was tried, and it was found the stuff came out quite rough." This statement took me quite by surprise, and if such grates have been tried in our machine it must have been done when our backs were turned, and such trial must have taken place without our consent or knowledge. We have never seen or heard of such grates being tried in our machine until Mr. Vivian made the statement at the meeting; the grates we had to work with had very much smaller holes than those used at South Condurrow, and no allowance whatever was made for this difference in size of holes in comparing the results; the motive of this is obvious.

Regarding the fuel question, this was never intended to be taken into account, as we sent down a boiler to work it very much larger than necessary; the directors were anxious we should send this boiler, and stated the fuel question should not be entered into. The machine has done all we promised of it, and it is admitted on all sides that it does its work well, and with little slimes; and as a last resource they try now to reject the machine on account of the consumption of fuel; this, however, we will not allow, and the matter is now placed in our solicitor's hands, and when the case comes before a jury we shall be able to prove that our ore crusher has done all we stated it would do; and at the same time we emphatically deny Mr. Vivian's statements as to the consumption of fuel.

One of our firm was at the mine for upwards of a month to test the machine, and it was not until the latter part of the time he was there that the coal question was mooted, and only on one day for a few hours was any note taken of the amount of fuel burned.

——— DONALD, ATKEY, AND CO.

THE PATENT STEAM-HAMMER STAMPER.

SIR,—In reading your report of the half-yearly meeting of the New Dolcoath Mining Company, I was perfectly astounded at some of the statements made by Mr. Vivian in reference to the Patent Steam-Hammer Stamper. These statements are so outrageously contrary to the facts, and so easily disproved, that I am surprised beyond measure at Mr. Vivian having ventured to make them. Mr. Vivian is reported as saying that "exactly the same size of grating as that used at South Condurrow was tried, and it was found the stuff came out quite rough, the reason being that it was forced through, whereas in the Cornish stamps the stuff could not be forced through, and con-

sequently was crushed down" ("and," he might have added, "consequently converted into slime, to the great convenience and advantage of those who possess large slime works on the Red River!").

I cannot imagine how Mr. Vivian could have allowed himself to venture on such a statement as the above, since he must have known it to be untrue, and easy to be disproved. The grates in use at South Condurrow are what are termed No. 32 gauge, as I was informed by the makers, Messrs. Pool, of Hayle, and also by Mr. Vivian himself. Now, our grates are of a peculiar shape, and had to be specially made to a template, which we provided; they were made by Messrs. Pool, and were No. 36 gauge, and very much finer than the South Condurrow grates, by something like 60 or 70 holes more in the square inch. Messrs. Pool made all the grates we used, and never made any other size for us than 36, and no such trial as described by Mr. Vivian with South Condurrow grates ever was or could have been made, as we never had the grates to make it with, nor has Mr. Vivian the slightest shadow of an excuse for such deliberate misrepresentation. This statement as to the grates used can be confirmed by Messrs. Pool, who made them.

It is quite true that sometimes in stamping a good many rough grains made their way through the coffer, but from a very different cause to that named by Mr. Vivian, as he must be perfectly well aware. The stream we had to depend upon for supplying the machine with water for stamping is so situated that although we purposely placed the machine as low as possible to suit the strips and temporary dressing-floor, the mouth of the proper feeding shoot on the machine was too high for the water to flow in thereat (even when the stream was at its highest), and we had to fix a temporary wooden shoot into one of the grate openings in order to get it low enough, though even that did not bring it low enough for the stream in the summer months. The machine not being arranged for this plan, we could not make a perfectly tight joint where the wooden shoot joins up to the grate opening, and consequently after a few hours stamping the joint would begin to leak, and a good deal of fine gravel would begin to escape at that point. Apart from this, the stuff came out a regular even grain, the proper size for the grate-hole, and with a very small proportion of slime.

I emphatically deny that there ever was an "ample supply of water." If there had been we should not have been driven to the temporary shifts and tinkering up work we were obliged to adopt in order to get the barely necessary levels between stream, stamper, and dressing-floors.

I have hardly patience to deal with the next statement of Mr. Vivian's—that it was "impossible for it to do anything like its duty unless supplied with steam at 70 lbs. to the inch." During the whole time I have been with the machine I never had it working with any higher pressure than 60 lbs. to the inch, and I weighted the safety-valve myself, so that it could not go beyond that pressure. The most convenient working pressure was 55 lbs., but we worked, on the average, with about 50 lbs., and I have timed the speed at these pressures from 130 to 160 blows per minute, and doing the duty of 15 or 16 stamp heads. The fact is, the men told off for firemen were ordinary miners, who understood nothing of firing, and could not (or, perhaps, would not) manage the fire so as to maintain a steady equal pressure; the steam pressure was, therefore, continually varying, sometimes blowing off full bore at the safety-valve, and sometimes down to 30 or 35 lbs. Such erratic firing I never before saw. The coal would sometimes be allowed to clinker on the bars; then the fire would be pulled out, and the bars cleaned, letting steam down too low to drive the machine, and we would have to stop to fire up and get up steam again. In the latter trials, owing to the scarcity of water, the machine could only be worked for four or five hours at a time, and steam had to be got up specially every time. These are circumstances peculiar to our position at the mine, and not peculiar to the machine itself; and yet a comparison is instituted between our machine, with No. 36 grates, on harder material, and working under these unfavourable conditions; and the South Condurrow stamps, with No. 32 grates, on softer material, and with stamps working continuously night and day, so that they have only to light the fire and get up steam once for every 126 hours run, where we have had to light the fire and get up steam for every four or five hours run, and with an experienced fireman for the stamps, to contend against an ordinary miner for our machine. I could say more on this part of the subject, but must leave it to some other time. I will only add that the steam cylinder of the hammer is only 7½ in. diameter and 12 in. stroke, whereas the boiler is 5 ft. diameter and 23 ft. long, and, therefore, capable of driving two or three more machines, with very little, if any, increase in the consumption of fuel if properly managed.

When we first took the machine to the mine I was requested by Messrs. Vivian to erect it on its present site, in a temporary manner, with a view of merely testing whether it would stamp the stuff to the proper fineness; Messrs. Vivian having at first objected to the machine on the ground that it would crush the stuff too fine. I made the trial as requested, and the result was entirely favourable to the machine. Mr. Comyn had a careful test made, and found that the slime contained merely a "trace" of tin, whereas a sample from the head of the machine showed 25 per cent. of tin, and the proportion of slime was very small. This I understood at the time was all that was to be tried on the present ground; but having silenced detraction on that point, I found myself quite unexpectedly called upon to prove various other things with the machine on the same ground, and under circumstances extremely adverse to the machine. I was told that the ground originally used as stamping ground for this mine, situated at Roseworthy, was occupied by some other company, and that we must make the best we could of the ground we were on.

We have now, after much trouble and annoyance, mastered all difficulties, and if the supply of water could be kept up we could now keep on stamping regularly. Now, if there are no specially unfavourable obstacles connected with the present site, why not put the new stamps there, which it is proposed to purchase at a cost of 1600*l.*? Why do they pass over this admirable site on the mine itself, and where they say there is an "ample supply of water," and "propose erecting their stamps in a valley where there is a never-failing supply?" It is a very strange thing that while asserting on the one hand that we had everything in our favour on the present site, they practically admit the contrary by not venturing to erect the new stamps there. The simple explanation of the whole matter is that when this company was started the necessity of obtaining a suitable dressing ground was entirely overlooked or neglected. We sent the machine under the idea that the dressing ground was all ready for us, and I believe the directors were also under that impression. Although we can now manage the stamping on the present ground, it is altogether impossible to carry on the requisite dressing operations there. The machine is now ready for stamping any amount of stuff; but there is no suitable place and no convenience for dressing it, and as this would be a poor tale to come to the shareholders with, some excuse must be found for throwing the blame elsewhere, and, of course, it is thrown upon the machine, for the simple reason that if the machine were accepted the shareholders would naturally expect the returns from the stamping to begin coming in at once, and would insist on knowing the cause of the delay. Then would have to come the awkward admission that all this time nothing had been done to provide a dressing ground. As it is, the obtaining of the dressing ground is merged in the order for the new stamps, so as to make it appear one and the same thing, and a necessary consequence of the so-called failure of the other machine, and so to divert attention away from an omission which would have been made glaringly manifest by the acceptance of the steam-hammer stamper.

As a specimen of the arguments used against our machine, I may point out that Mr. Vivian states as an objection to our machine that it "would require another to supply it with water," whereas "the old stamps engine was provided with pumping gear which lifted the water," though at the same time the report says that no such pumping gear would be required on the new ground, as there is an ample supply of water without pumping. I may, however, observe that in cases where it is necessary to pump up the water for stamping, it is easy to provide a donkey pump for the purpose, and at probably less cost than the addition of heavy lumbering pumping gear to the stamps engine would entail, and even then the total cost, including all, would probably not exceed one-fourth of what will have to be expended on the proposed new stamps.

JOHN STURGEON.

PREVENTION OF COLLIERY ACCIDENTS.

SAFETY CATCHES FOR PIT CAGES.

SIR,—In the concluding section of Mr. Creswick's Prize Essay (see *Mining Journal* of Aug. 23, p. 925) a description and sketch are given of a safety catch to prevent the cage from falling down the pit (in the event of breakage of the winding-rope), by means of a pair of serrated clips, centred eccentrically; and the idea is that the preponderance of the outer ends of these clips would cause them, when the rope breaks, to grip the conductor tight between them, and so support the cage upon it. The objection, however, which presents itself in regard to this plan is that, theoretically, the entire cage will, at the moment of the rope breaking, begin at once to fall at the same rate as the outer ends of the clips, and these, therefore, will not fall relatively to the cage; the intended gripping action of the clips will, accordingly, depend upon the chance of one or other of them happening, after the cage has already begun falling, to rub against the conductor hard enough to tighten itself, when it will thereby immediately tighten also its fellow clip. But it may possibly happen that meanwhile the cage has been falling long enough to acquire such a velocity as that the sudden stoppage, when the clips do thus come into action, will result in the breakage of the cage itself, or of the conductor, by the excessive strain so suddenly produced. For obviating this risk of the clips failing to act promptly enough when the rope breaks, it is only necessary to add a strong spring, tending to depress the outer end of each clip; the action of the clips will then be independent of gravity, and they will both of them grip the conductor instantaneously on the breakage of the rope.

I should be glad to know whether it was Mr. Creswick's intention to do without springs in the safety apparatus described in his Essay; and, if so, will he kindly state what extent of practical experience there has been of that plan, and whether any accidents whatever are known to have occurred through the clips failing to act promptly enough when not furnished with springs. A. B.

Sept. 2.

COAL IN NORTHAMPTONSHIRE—THE DISCOVERY AT WELLINGBOROUGH.

SIR,—For many years past the probable existence of substantial deposits of coal in Northamptonshire has been the subject of intermittent controversy, and there are many who still have faith that the precious petrified vegetable will yet be found here. Undoubtedly it only requires the discovery of some extensive deposit of this valuable commodity to make Northamptonshire one of the richest counties in England. Extensive beds of ironstone, carrying abundant percentage of good metal, and, therefore, most valuable, intersect the county almost from end to end. But to give the ironstone its full value we want a coal supply close at hand. This would make a discovery of any extent of coal extremely valuable, though the demand for coal for domestic and other purposes would alone be sufficient to render the discovery one of great importance. The search for coal in Northamptonshire has hitherto led to such discouraging results that our readers will be disposed, perhaps, to think that the discovery at Wellingborough is "too good to be true," as an earnest of an extensive deposit. The circumstance is not without hope. Some men in the employ of Mr. Butlin, of Wellingborough, were in the early part of the week digging for trial holes for ironstone in a field near Atterbury's Lodge, Irchester, when, at a distance or about 14 ft. from the surface, they came upon a seam of inferior coal. There was first a seam only a few inches thick, then a slight layer of shale, followed by a second seam of coal about 1 foot in depth. About a ton was dug out, and found to contain a considerable admixture of earthy substance, is rather friable, burns readily, but leaves much ash. Mr. Butlin, who rents the minerals of the land, was from home, and, therefore, the discovery has not been pursued.

That there may be coal in the neighbourhood receives some colourable confirmation from the circumstance that some years ago coal was found in Poddington Lordship, although not so good in quality, or of so deep a seam. Is this an indication that workable coal is to be found in the county? It is not denied by some eminent geologists that coal may exist at some depth beneath the surface of the county, but suggested at the same time it is at such a depth as to be impracticable to work it. Mr. Sharp, F.G.S., in speaking of the 30,000*l.* expended some 20 or 30 years ago in a fruitless search at Kingsthorpe, says that it is not impossible that workable coal might be found at a depth of 4500 ft. below the present shaft at Kingsthorpe, a depth twice that of any existing mine, and reaching far below the point at which, with known appliances, it is possible to extract coal. Whether the Wellingborough discovery be due to a "geological fault" or not, it is sufficiently substantial to give encouragement for a further search. W. H. P.

PEAT AS FUEL—No. II.

SIR,—The most primitive method of preparing peat for fuel is still followed to a great extent in some parts of France, Germany, and other continental countries. The peat is dug out of the pools by labourers by means of a shovel, and put into a large wooden tank. When the tank is full some women and children stamp the stuff down with their naked feet. The tank not having been made watertight allows some of the moisture to run out. When the peat is thought to be sufficiently compressed it is put into square moulds, and exposed to the open air, where it takes six or seven weeks to get the remaining objectionable moisture out of it, sometimes even more, according to the state of the weather. Still nothing but a poor fuel is obtained, having but 2?01 of calorific power, and, therefore, suitable only for domestic purposes. This kind of process is carried on in the Somme Valley, near Louvain, in Belgium, and in many districts of Holland and Germany. The supply of such a fuel is necessarily limited to the locality where it is found.

I do not exactly know the quantity of peat one man can work in a day by this method, but I have no doubt that if labour were not as cheap as it is in the districts alluded to the preparation of fuel in such a way would prove but a poor business. A much more rational system, however, is used in some other parts of France, such as the Vosges department, where peat charcoal is extensively used in smelting iron. The way in which it is prepared there is as follows:—The peat after being dug out is put into a kind of mortar trough, and a rather considerable quantity of water is added for the purpose of washing it. When this is sufficiently done it is run into a large tank, where it subsides. The water is then drawn out and the residuum dried and carbonised, either in heaps or in close retorts. Six tons of raw peat are stated to yield 1 ton of peat charcoal. This process is to be looked upon as a great improvement on the old-fashioned plan, not only because, assuming the results stated to be correct, it must prove remunerative, but also because it opens up what, to my belief, is the proper road towards the industrial utilisation of peat. Ever since the axe was first laid to what remained of the Hercynian and other primæval forests of Europe the vast tracts of woodland, which used to form such a large portion of the area of the northern and central countries of that part of the world, have dwindled down to diminutive proportions, and in consequence of this wood charcoal has become, and will undoubtedly remain, much too scarce and too dear to be used for smelting purposes. In England forests have practically ceased to exist, but even in countries in which a little more of them has been preserved complaints are now made about the ill-considered haste with which they are cut down, and if there is one thing to which Swedish iron owes its undoubted superiority to all coke-made iron it certainly is to its being made with charcoal.

Now, it is indisputable that peat charcoal is much purer and better adapted for metallurgical purposes than fossil coal, and if properly carbonised it would prove almost, if not quite, equal to wood charcoal. It does not contain any, or scarcely any, sulphur or phosphorus, indeed, Mr. Fairbairn, in his "History of Iron," lays it down as his opinion that by using peat charcoal for smelting purposes England might turn out metallurgical products fully equal to the far-famed Swedish metal, and this observation would be of general application if all iron smelters would but resort to the peat they had at their disposal.

Before entering on an examination of the commercial value of peat and its subsidiary products, it may be laid down as a conclusion drawn from the foregoing considerations that peat is possessed of sufficient intrinsic value to warrant reasonable attempts at its utilisation on a large scale; and if there is a case in which the joint working of the chemist and the engineer is urgently called for, it is certainly in the preparation of peat fuel and peat charcoal. Of the many mechanical combinations for pressing, pulping, or otherwise working peat I will speak bye-and-bye, not indeed as an engineer, but as a chemist looking upon them as instruments calculated to subserve as far as they can suit the purposes to which, in my opinion, peat may profitably be applied—that is to say, the production of charcoal in general, and the promotion of the use of peat charcoal in iron smelting districts in particular. In this respect it is to be borne in mind that peat fuel must be produced at less cost and sold at a lower price than coke, or, at any rate, must not be more expensive than fossil coal after distillation has extracted its liquid and gaseous products. The way in which this might be effected will have to be shown in the future.

It may appear as if I laid undue stress on the value of peat charcoal, but in point of fact I believe that this is the only shape in which peat may be turned to useful account as fuel on a large scale. Besides the calorific power of peat charcoal, the illuminating qualities of the gas produced from the same raw material are worthy of the most earnest attention. A great many experiments made of late have convinced me that a sufficiently large quantity of illuminating gas can be extracted from peat to warrant an attempt at utilising the gas, apart with the other products derived from peat.

As the average of ten different analyses made on ten different kinds of peat fuel, I have obtained 4212 cubic feet odd of gas from 1 ton of peat. Up to now that fact has been overlooked, and whenever peat charcoal is made on the Continent it is carbonised in the same way as wood, except perhaps in very few cases. The dry raw peat is piled up in a large heap, and the whole mass is covered over with wet charcoal powder, and then set on fire, care being taken to admit just sufficient air to consume the only gaseous products of the peat, and keep up a very high temperature without needlessly consuming the carbon. In a few localities the peat is carbonised in closed ovens, or furnaces, and the products of the distillation are preserved and form articles of great value. With the first-named process the yield of charcoal does not exceed 30 per cent. of the raw material, and with the second 40 per cent. Such results are only obtained with good fuel made of good raw peat.

From numerous experiments made by me on different specimens of peat fuel kindly supplied to me by Messrs. Clayton and Co., of the Atlas Works, Harrow-road, London, I gather that no less than 8 to 10 tons of raw material are required to obtain 1 ton of good charcoal. I have had some peat fuel made with peat from Cambridgeshire, by Messrs. Clayton and Co.'s valuable pulping machine, and I obtained 54 per cent. of charcoal of good quality. The result obtained by Messrs. Clayton and Co.'s machine is 20 per cent. of raw material treated, so that according to the result I obtained, raw peat does not yield more than 10 per cent. of good charcoal. These results are confirmed by the experiments made by Dr. Kane. He obtained with dry Irish peat fuel from—

Cappage	Carbon	51·05
Killeggan	,,	51·34
Kilbakan	,,	51·18

Showing that after deducting the carbon contained in the fuel in the state of tar, hydrocarbon, oil, and carburretted hydrogen—about 10 per cent., and adding to the result the respective quantities of mineral ashes—2·55, 1·83, and 8·06, which, of course, are part of the charcoal, the real proportions of the latter would be—

Cappage	Charcoal	43·60
Killeggan	,,	58·87
Kilbakan	,,	49·19 per cent.

Generally speaking, 1 lb. of peat charcoal will raise the temperature of 59 lbs. of water from 1° to 100° centigrade, which shows that it possesses the same calorific power as coke. A. VASSARD.

25, Finsbury-place, London, Sept. 3.

REFINING AND PURIFYING METALS.

SIR,—I observe that Mr. James Webster, who is well known as a patentee of processes connected with the manufacture of iron, has just added another to his list—a method of applying gases or vapours to the refining and purifying of metals, and in apparatus to be employed for that purpose. Now, the sole object of his present invention appears to carburate the iron, and if this be so I can scarcely think that either of the mixtures he proposes would be likely to prove very economic in practice. The gas or vapour used consists of an admixture of vegetable carbon and hydrocloric or nitrous or nitric acid, but by preference wood naphtha and hydrochloric acid, mixed in suitable parts, combined with atmospheric air, and in some cases coal gas, the whole being driven in the form of a vapourous gas through an outlet pipe in the apparatus into the furnace. The apparatus consists of an iron tank enclosing an earthenware receiver partly filled with coke, and on the top of the receiver is a glass globe containing the mixed fluid, which is drawn off in suitable quantities on to the cokes, the air and gas coming up through the cokes and combining with the mixed fluid.

Of course, by blowing in the vegetable carbon there is no doubt that carbon is brought in contact with the iron, but the question is whether it is in that condition best suited to ensure the necessary combination. I think not, but am rather of opinion that the use of spiegeleisen, even when that metal would have to be imported, would be much cheaper; but I cannot see why many of the carbonate iron ores of this country should not be turned to account, both in such processes as that of Mr. Webster, and also in the Bessemer process. Probably the facility for obtaining spiegeleisen has led to our home supply of carbonate ores (to which the necessary proportion of manganese could readily be added) being neglected, but now that prices are so high, I think it would be well to give the matter some further consideration.—*Sept.* 3. SEEND.

ROYAL CORNWALL POLYTECHNIC SOCIETY.

SIR,—After the repeated eulogiums which have appeared from time to time during the last three years in the Journal from your able and practical correspondents, many of whom have had opportunities for practically testing the value of the Burleigh Rock Boring Machinery, together with the fact that this machinery has recently obtained the highest honours in the Vienna Exhibition, the Royal Society Show at Hull, and the Highland Agricultural Society Show at Stirling, we feel sure you will only be too ready to express regret at having, in your last week's impression, published (inadvertently on your part) a report headed as above, which is disparaging and highly injurious to our interests, on account of the gross misstatements appearing therein, and that more especially so when we inform you that we hold letters couched in almost the same words as those of your report, and issued from the office of the Mr. Thomas Warrington (incorrectly described as the introducer of the Burleigh machinery), which letters, on account of the scurrility of their contents, were sent to us for perusal by our friends who received them. We, therefore, ask you to afford us the opportunity of contradicting such misstatements as they appear in the report referred to.

1.—The Burleigh Rock Boring Machinery was brought out by ourselves alone, and Mr. T. Warrington was engaged only as a servant in the employ of one of our agents.

2.—The comparison of the number of parts is simply false and ridiculous. The eminent success of the Burleigh over other machines lately brought before the public, whether or not due to the necessary parts about it, is an accomplished fact; but should it be desired by our customers to have a machine with even fewer parts than the boasted "42" of Mr. T. Warrington's we can supply them with such, without departing from the Burleigh principle.

3.—The comparison of prices is also false and ridiculous, that of the Burleigh being at present not 146*l.*, as represented, but 105*l.*, as per price list.

4.—The absurdity of the statement as to the saving of 50 per cent. in pipes for conveying steam or compressed air, due to a slight re-

duction of friction from the alleged fewer parts of Mr. Warrington's machine, is apparent to any practical man, and is not worthy of further comment from us.

The statement that "there is nothing particularly new in the general principles" of Mr. Warrington's machine is about the only correct one appearing in the report, from the fact that the chief parts appear to be those of the Burleigh; but this question the Court of Chancery will shortly be called upon to decide.

We regret we should have, in justice to ourselves, to take notice in this manner of any statement appearing in your valuable Journal, but would it have been necessary on this occasion if the report referred to had not appeared under a heading that might lead some of your readers to believe that it had emanated from yourselves.

T. BROWN AND CO., Engineers.

93, Newgate-street, London, E.C., Sept. 3.

GAULEY KANAWHA COAL COMPANY.

SIR,—I am desired by my directors to reply to a letter in the Supplement to last week's Journal, signed J. Bowron, in which he says—"I was quoted in the prospectus as having reported on the property of the company." This is hardly correct; the prospectus simply says "the *district* is spoken of in the highest terms by Mr. Thos. Sopwith, F.R.S., Mr. Bowron (Newcastle)," &c., &c. This surely does not imply that Mr. Bowron has reported on the property. On Feb. 21 last, before the Society of Arts, Mr. Bowron spoke in the highest terms of West Virginia as a mineral producing district, further saying "he could concur in the remarks of Professor Ansted" (now the chairman of this company). As the journal of the Society can be purchased by anyone for 6d., and Mr. Bowron's remarks are published therein, surely there is no impropriety in stating in the prospectus that he has spoken favourably of the district.

Mr. Bowron agrees with "Carbon" that the "Gauley river is not navigable at any season, and could not be made so without works of the most costly character." Against this there are conflicting opinions, in regard to which Professor Ansted is about to visit the property. It is quite true that payment to the vendor "consists solely in deferred shares," on which, moreover, nothing is to be paid until the preference shareholders have received 10 per cent.

My directors are pleased to see that in his letter to you Mr. Bowron more than corroborates their statements of the value of their property, both as regards the quantity and quality of the coal and timber. The whole question turns upon conveyance to market, and while some say the Gauley will not do for this purpose, others say it will. But, after all, it is only a question of six miles to the Chesapeake and Ohio Railway, and negociations are in course for the construction of a mineral branch.

I leave these facts to speak for themselves.

Sept. 3. ——— A. STEUART, Secretary.

THE RIO TINTO AND THARSIS COMPANIES.

SIR,—The concluding paragraph of the last article on the Rio Tinto Company, published in the Journal, winds up in the following very extraordinary style:—"We have felt called upon to make the above remarks after the uncalled-for attack upon our article by Mr. Henderson, and here, as far as we are concerned, the controversy must end." Nine persons out of ten, seeing this at the tail of a very verbose and pointless article, without signature, have done you the great injustice to infer that the unsigned articles on this subject have been your's, Sir, and that the columns of your Journal were closed upon any further communication from me. The board of the Rio Tinto scheme have shown themselves adepts at imposition; the previous communications of this moribund board have been cunningly adorned with the editorial or royal "we" in great profusion, so that many of your readers have run away with the idea that I have been rash enough to measure swords with the redoubtable Editor of the *Mining Journal*. I live too far north to be guilty of any such rashness; and, if you remember, I cautiously called at the office in Fleet-street to reconnoitre, ere I fired my first shot, satisfied by your personal assurance that you were perfectly neutral, and would hold the scales even. I had no hesitation in criticising freely the scheme proposing to take from the British public some six millions sterling, without the slightest chance of giving anything in return. The directors of the Rio Tinto scheme having splashed at me two or three small puddles of mud (which appear to come quite handy to them), with drums beating to cover their retreat, have ignominiously skedaddled, and hastily closed their door. They have had enough of it. They are quite satisfied. Notwithstanding the proverbial carriage of the "Dumbarton Youth," who has the honour to have a seat in their board, they decline to fight any more, and give in. I propose to nail on their closed door the following brief *resumé* of the points that I have proved and they have left unanswered, and I shall stay outside ready to argue these several propositions, one by one, pleasantly and fairly, whenever they choose to open their door.

1.—This Rio Tinto scheme is by far the most gigantic mining scheme that has yet been brought before the British public, larger far than Emma, Mineral Hill, Flagstaff, Last Chance, Utah, Tecoma, and a host of other notorious schemes all added together. By their own prospectus they make it perfectly clear that the shareholders cannot possibly earn a single sixpence until six millions sterling have been spent.

2.—That even if their present scheme floated, four millions of this capital must be borrowed money, and as the only security will be mining and railway property in Spain, that in the normal and prospective state of that country, 10 per cent. interest would be an easy rate.

3.—That the original purchase-money and premium, and the prospective interest on borrowed money, makes this scheme the maddest that was ever brought before the public.

4.—That seven out of the eight directors are agents to buy and sell for the company on commission "as long as the company shall carry on business."

5.—That I confidently prophecy that wont be for long.

6.—That I have convicted them, and they have already confessed to many grievous and inexcusable ignorances and errors.

7.—That imputations of interested motives are not arguments.

If I had no interest in the matter I would not take the trouble to write about it, and if I were as ignorant as they confess themselves to be I should be afraid to write. I argue in this cause because I am interested in it, and know a good deal about it. I do not profess to be a philanthropist, and I hope I am not a fool.

These seven theses they have yet to controvert before we can proceed to discuss as many more reasons why this scheme cannot possibly succeed. They, however, give us some fresh information in their *article*, as they call it, which, with your permission, I will examine. Your readers will carry in their minds that the Messrs. Matheson and others have bought these mines (as they say) for 3,850,000*l.*, payable in ten equal yearly instalments of 385,000*l.*; that they have paid the first instalment, and another is due in March next. I believe they have also given their obligations for the balance. They have called upon the public to relieve them from this frightful responsibility, and the public have wisely declined. I understand that they have the power to back out by forfeiting *only* 385,000*l.* March next will certainly see the end of this hopeless scheme. It is some consolation, perhaps, for men placed in this awful position to babble about "the enormous richness" of the Rio Tinto property, which last year, as everyone knows, even with 12 managers, lost 16,000*l.* They do not, however, approve of the rule-of-three sum I gave them in my last. They gave it up, as being, with all the financial talent on their board, a little above their capacity. Besides, it was a very disagreeable fact to contemplate, and they did not like it, so they came back to very easy sums; and suppose the Tharsis royalty to be 90,000*l.*, then multiply by 20, and they get millions easy—1,800,000*l.* as the value of the freehold. I wonder who would give 20 years' purchase for property in Spain? Who would give 10 years' even? In my opinion the Tharsis Company are far better off as they are. I should certainly oppose the addition of more than 150,000*l.* to the capital of the Tharsis Company to purchase this freehold. These Rio Tinto directors harp on this string as the only feature that Tharsis has not got, but they carefully conceal that Tharsis paid last year 40 per cent. profit after paying interest on railway debentures, and the royalty, which is equivalent to the interest on the freehold. What chance has Rio Tinto to pay any dividend after providing 10 per cent. interest on 6,000,000*l.*? Then, again, the proprietors of the Tharsis freehold are French gentlemen of high position, and they have gradually purchased the land surrounding the Tharsis Mine, to the extent of some 21,000 acres, so that copper extraction on the mines may be carried on to any extent without possible claim for damage. The Rio Tinto, with their three or four thousand acres only, will have a fine crop of these actions if they attempt to extend. Then, again, should any international question crop up, the Tharsis Company will have the advantage of both the French and English flags, which I consider no mean advantage in these timid days at our Foreign Office. The Rio Tinto board confess to several mistakes in their previous communications, and they add that "they were in error in stating that at 9*s.* 10*d.* per unit for copper, and 7*d.* per unit for sulphur, the Rio Tinto Company could not realise profits." This, on the contrary, was the truest thing they have said. The well-known poverty of the Rio Tinto in copper, coupled with its great distance from a seaport, and the mountainous nature of the route, make it perfectly clear, even to themselves, that these prices would never pay.

Irvine, August 28. ——— WM. HENDERSON.

NOVA SCOTIA GOLD FIELDS.

SIR,—It is very gratifying to your colonial readers to perceive that the influence of the Journal is now being brought to bear in favour of Nova Scotia, and I would ask your permission, as one who has seriously considered the subject, to illustrate the advantages to be gained by following your advice of consolidating the principal gold mines in the Province under really able management—the only way to divest gold mining there of its speculative character, and establishing it, as it has shown it deserves to be established, on the basis of an industrial enterprise. I take my example from Sherbrooke, at once the oldest and least desultorily worked district, which, during the years 1862 to 1872, inclusive, yielded in round numbers 58,000 ozs. of gold, in value 232,000*l.* This was obtained from 72,000 tons of quartz, mined and reduced with the daily labour of 118 men, giving an average of 18 dwts. 2 grs. to the ton, and 177*l.* 13*s.* 11*d.* yearly for each hand engaged.

It should be borne in mind that Nova Scotia has not the perfected mining machinery and gold-saving appliances in use in California, Australia, and the Brazils, and that most of the miners and managers are self-taught; yet the results cited far exceed the average results obtained from quartz mines in those more celebrated regions. The whole of the gold from Sherbrooke was produced from workings, about 6000 feet in aggregate length, on six parallel lodes, the deepest shaft being only 85 fathoms, and the mean depth of the exploited portion 25 fathoms, all scattered over a tract of 225 acres, or 265 so-called areas, which in the Sherbrooke district are not laid out in uniform dimensions, but vary from 40 ft. to 180 ft. on the strike of, by 250 ft. across the lode. Those areas were owned among *twenty-one* incorporated companies, the smallest holding being 75 ft., and the largest 900 ft. on the vein. The total sum actually paid for them was 168,000*l.*, many of the claims having been bought at 2500*l.*, and some even at 4000*l.* per area, wholly unequipped.

Of the gross yield 200,000*l.* was produced from eight small claims aggregating 46 areas, which cost 94,000*l.*, and have, therefore, returned some profit. Even at the past average, and worked on the same scale to a mean depth of 1000 feet (though capable of being followed to still greater depths), the yield from those 46 areas alone would be over 1,000,000*l.* But let us see what would have been the financial result had the district been owned by one proprietary, corporate or individual:—

One 25-stamp mill, of best construction	£ 5,000
(The mills made in the Province are quite able to reduce 1 ton per stamp per day.)	
Wages, 407,238 days, at 5*s.* a day	101,810
(The tenure of leases depending on the number of days' labour, this item is greatly in excess of actual requirements, so also is the rate of wages, as boys were only paid 2*s.*, and labourers 3*s.* and 3*s.* 6*d.* a day.)	
General expenses, including stores, implements, superintendence, &c., at 8*s.* per ton	28,800
(This is probably 2*s.* per ton in excess of what the cost need be.)	
Royalty (say) 3 per cent. on the whole 232,000*l.*	6,960
Contingencies (approximately) 10 per cent.	14,430
Total legitimate cost.....	£ 157,000
Earnings of the mines, as sworn to	232,000
Balance in favour of mines	£ 75,000

Here, then, without taking into account the increased and cheaper output of ore, and the increased yield of gold which would have been consequent on the adoption of modern improvements in the works and in the mill, but adhering to declared totals, there still remains a margin which would have left a fair price for the property, and have paid back the capital originally invested with good interest.—*Sept.* 3. ——— ACADIENSIS.

LEGITIMATE MINING, AND CAPITALISTS.

SIR,—In the Journal of last Saturday I observe some remarks respecting the disposal by a well-known Cornish gentleman of his shares in several mines by sale and relinquishment, and it may, perhaps, not be out of place if I say that, independent of his interest in several mines as a shareholder, he is also largely interested as a banker and merchant. There is no disputing the fact that a man has a right to do what he likes with his own, and that, although of wealth, it is not to be expected that he should throw away hundreds and thousands in worthless concerns in Cornwall or elsewhere, of which I fear there are too many afloat; but to legitimate mining, and the development of the resources of the county, as a Cornishman, we certainly look for his support, and I cannot help thinking it hardly fair to his co-adventurers to desert them when, probably, surrounded with debt and difficulties, a greater part of the former, perhaps, having been incurred with firms in which he may be the principal partner. We all too well know the reigning troubles of the mining community; and for the chief actor to withdraw his support at the present moment means simply liquidation or the Stannaries Court. Times were when merchants and others contributed largely to laying open the mineral resources of Cornwall, but now the proportion of capital invested by those gentlemen in Cornish mines is almost incredible—although their eagerness to send in supplies is equally as discreditable. I have by me some statistics made in 1862, showing the amount of hard money sent into Cornwall from one office alone, and in one year, and out of that sum, 40,000*l.*, I am ashamed to see that but 600*l.*, or thereabouts, was subscribed by those supplying the mines with goods and materials. What the percentage would now be I am afraid to assume—but facts are stubborn things.

With reference to the second part of the paragraph (the above remarks applying to the first), I may say that I know so little of three of the mines mentioned that I abstain from any comment, but with respect to Treleigh Wood I have some more than slight acquaintance, inasmuch as I have followed its career from the commencement, in May, 1871, and, without specially referring to the several reports and flowery statements that have been published from time to time, I must say that I am much disappointed at the results, and I fear my regrets are joined in by more than one. When one reads in your Journal a report from "one of the oldest and most experienced agents in Cornwall" stating that 200,000*l.* worth of tin has been discovered, and the agent's report, in which occurs "There are thousands of tons of tinstone already broken that can be hauled away at a profit," it is difficult to understand how it is that only a few tons of tin have been sold in 27 months, and that several calls should have been made upon the unlucky adventurers in the same period of time. The largest shareholder's knowledge of mining is, I am afraid, not equal to his sanguine hopes of success, or he would, probably, long ere this have ascertained for himself as to the merits of the concern, which is now stated as being worth to him at one time 100,000*l.*, but now of a nominal value in the market. These figures look very well on paper, but they have a better appearance on the credit side of a pass-book, and would be far more satisfactory than merely seeing its shadow as shares in a cost-book mine. It is all very well to say that such and such a share is worth so much in the market, but I maintain that when Brown, Jones, and Robinson hold all the shares in a company, and combine together not to sell a share, you may call the shares and quote them what you please; but the best test of their real value would be for Brown to instruct a broker (not his own) to sell half, or a fourth, of his interest in the company—and it is just possible that had this been done when Treleigh Wood shares were represented as being at 200*l.* per share, and going to 700*l.*, I venture to say that a very different sum would have been offered for them. We can ill afford now-a-days to lose the interest of a good *bona fide* speculator whose inclinations are clearly in favour of honest mining, and when there are so many old-established and respectable concerns where the risk is little compared to remunerative investments, and there is a fine field for the employment of capital. Treleigh Wood may be his first adventure, but I hope not his last, as I wish to see his name at the head of the list of many of our leading mines, and out of the influence of interested or inexperienced advisers.

——— A MINER.

TIN MINING IN MEXICO.

SIR,—The discovery of tin in Australia sprang from the research and intelligence of Cornish emigrants, and although up to this date their efforts have not proved very lucrative, yet they have done enough to demonstrate that no distance or obstacles can daunt their courage in search of wealth. The quantity supplied for a time somewhat startled the home market, and conjecture was rife amongst smelters as to the future supply. Still, we are informed from reliable sources that the quantity will rapidly diminish unless the prices materially augment through "co-operative action." Notwithstanding the impetus given to the formation of public companies through the rumoured riches of our distant countrymen, most unhappily for those connected therewith the cost precludes anything like a regular and permanent supply. In fact, the article costs more than its commercial worth. No one has ventured to issue a verified schedule of products *versus* outlay. Not so, however, in respect to Mexico, for tin is found in abundance in the rivers and alluvial soil, extending over a large area of low country, and at all seasons accessible, and from 200 to 300 miles south of the City of Mexico. The calculations appear to be based upon a sound hypothesis, and, judging from the careful statistics compiled, there appears to exist but little doubt of large quantities being readily obtained at from 37*l.* to 40*l.* a ton delivered in England. Hence there is every probability of the company just promoted, with a capital of 10,000*l.*, to report upon and secure the necessary titles of this particular tract of mineral ground, proving a substantial success. The manager is Mr. Thomas Spargo, of Gresham House, and he is evidently associated with promoters of respectability. The original mover of the scheme is Capt. Grose, who spent about 40 years in the country, and through his association with Capt. John Burgan, who has long been a pioneer to successful tin mining in the West of England, the undertaking, we think, is certain to receive that thorough and practical investigation which alone is required to gain confidence and establish a commercial position for the future, It, therefore, behoves all tin miners to support the "Tin Co-operative Movement," which now comprises hundreds among its adherents, although, singularly, not appreciated by Cornishmen, who of all others are most interested in its establishment.—32, *Fleet-street, Sept.* 5. TREDINNICK AND CO.

SUCCESS IN LEAD MINING.

SIR,—Success ever attends the brave, the earnest, and the studious disciple of the "Science of Investments." It is absurd to dismember intelligence, industry, and perseverance from the achievements of Capt. W. Teague at Kitty (St. Agnes), Tincroft, Carn Brea, and at other mines, though the price of tin and the costs of labour and materials cripple his efforts, as is evidenced in the maintenance of product when compared with the gains acquired. The temporary decline, it is to be hoped, of profits arising solely from commercial changes, added to the long-protracted system of finance persisted in in the conduct of cost-book mines, and which are the primary elements of conflict. Why not have a working balance of 20,000*l.* at Tincroft and an equal amount at Carn Brea and Kitty? Then the tin could be smelted and realised as metal, instead of forced into the market as ore (black tin), in order to meet costs that have to be paid every four weeks. There is not volume enough in the finance, nor are the companies in a position to exert an independence of smelters and bankers; hence the chief causes of the smelters ruling the roost, and the local executives being in the hands of their bankers and merchants. No coal should be supplied without tender, and the quality should be studied, for it is ludicrous to think that upwards of 150,000*l.* annually is consumed by the miners of Cornwall, and that they as a body possess no fair and open competition in the trade; and who can doubt the great advantages that would accrue to that "body" with a "co-operative supply company" having a capital of even less than one year's consumption? To kick against the pricks is often to encounter more blows than caresses, still apathy and reckless indifference are more deplorable than even the sternest opposition, and in our judgment the day is not far distant when the two businesses, now isolated, of mining and trading, will become indubitably amalgamated. Why should smelters, merchants, and bankers fatten while miners starve and die in garrets, or drop into oblivion after spending their best days and earnest energies in fostering home enterprise and the maintenance of the mines of Cornwall? If tin mining in Cornwall does not pay at present for lack of "co-operative support," then capital need not remain unemployed, for lead mining is in the ascendant, and from discoveries recently made there is scarcely a branch of our home enterprises that affords such brilliant examples of success, or point to so many chances of startling wealth, as is now foreshadowed in the vista of the immediate future. The Van, Minera, the mines of Yorkshire and of the North of England attest the gains of lead mining, but there is scarcely a brilliant prize that is more fairly and deservedly won than the Llanrwst, in Carnarvon, by Mr. Endean, of Bishopsgate-street. The mine is all but in its infancy, the forebreast eastward is improving, and now yields 2½ tons of silver-lead ore to the fathom; and westward the product is 3 tons to the fathom, valued at 14*l.* a ton, the workmen being paid 3*l.* 10*s.* a fathom for driving. The costs are only 150*l.* per month, just 15 per cent. of the ore produced, to say nothing of the rapid accumulation of reserves. There are several lodes in the company's concession, and a winze below the adit level is worth fully 5 tons of lead ore per fathom. Mr. Endean has shown great energy and enterprise in carrying out speculative and legitimate mining, and few who know that gentlemen will fail to congratulate him on this his last and greatest success.

32, *Fleet-street, Sept.* 4, ——— TREDINNICK AND CO.

CORNISH TIN MINING, AND ITS PROSPECTS.

SIR,—It is a serious question in respect to home enterprise, and worthy of earnest consideration, to comprehend and appreciate fairly the existing and prospective products of Cornish tin mines. The high price of labour, the costs of machinery, and the almost unprecedented charges for materials, especially coals, render the prosecution of the deep mines all but an acknowledged failure; for an intelligent public cannot admit the likelihood of continuous working when the pursuit has become a commercial disaster—for without gains money will be hoarded, and the coffers of the capitalists closed. Unless the miner stirs himself, the only profits of such undertakings as the subjoined will be absorbed by the smelter, the landlord, and the executives; for, with ruling prices of tin, we may fairly ask, what can be anticipated otherwise than losses to shareholders from working North Roskear, Seton, Botallack, Spearne Moor, Levant, St. Ives Consols, Margaret, Kitty (Uny Lelant), Providence, Great Vor, Trumpet Consols, with a host of others. That such will prove the case all practicals are fully aware, and no one can deplore the facts so graphically foreshadowed than ourselves in the lamentable, if not cowardly, abandonment of Poldice and Great Wheal Busy. These undertakings would, undoubtedly, have largely contributed

to the volume of product could capital have been raised to unwater the old workings, and to have prosecuted the operations to a successful issue. The example of these "abandonments" will, we apprehend, prove contageous, hence we predict that the "disk" of Cornish tin mining is "spotted" in the prospective, and that the resuscitation of such old mines as Wheal Crenver and Abraham, South Roskear, and others of like calibre, are doomed to oblivion, although only a year ago their success was, in popular delusion, all but a realised conclusion. And, pray, what is the cause of this sudden revulsion of popular feeling—this fatal collapse of *esprit* and dearth of enterprise? Why, the answer is obvious. The veriest votary of rank toryism, the closest champion of conservative "vested interests" (nay, the concentrated circle of "confederate smelters") know and acknowledge it—that is, the absence of working capital possessed by the producing mines, the necessity of immediate sales of tin to meet working costs, coupled with the apathy of the present obstinate and self-satisfied school of Cornish mining captains, who tread in the paths of their forefathers, and there is no more reform and progress in their education and conduct than there is movement in a tortoise, or climbing power in a lame hippopotamus.

We are startled to think that the proposed establishment of a co-operative tin smelting company has not received a single response from Cornwall; not even an isolated suggestion or recognition of the project has sprung from the verdant "brains" of that "confederate" community. The apathy of the 125 resident shareholders in Dolcoath, to say nothing of other mines, is only equalled by the indifference of absentee proprietors as to the supply of "fuel," and which, we are credibly informed, is without "tender," and solely from one firm. This must be confederate supply, and is only equalled by confederate "smelting." When will the shareholders in Cornish mines become aware of their own interests, and cordially support a "Co-operative Tin Smelting Company?" Must the "salvation of Cornwall" be thrust down the throats of starving "Cornish chaws?"

I shall publish next week the statistics of in products for the decade 1863 to 1872 inclusive. TREDINNICK AND CO.

32, Fleet-street, Sept. 3,

TREGARDOCK GREAT LODE.

SIR,—I notice someone has replied to my remarks on Tregardock Great Lode, and has thought the cap fitted him. It is not the first time by many that I have called public attention to this great deserving lode. I have done so for over 40 years, and I certainly shall not retreat now. I am informed some persons have been driving a level for seven years past to cut the great lode. It is now said they lost their dial, or did not know the use of it; but I do know some parties have been seven years driving a level, as they suppose, south to cut the great lode, when they surprised a *picnic* party, by holing to the North Sea, just over where they were enjoying themselves. I will stake 50*l.* with any man who will consent that I will pass him into this level some 30 or 40 fathoms, and pass him out to the North Sea. The level was driven on a small branch, with a trace of *lead* in it, but it is unbottomed at the seashore, *out in* sight, and there worked on by the ancients. A winze is sunk in the bottom of this level, also said to be holed to the sea; but I have not seen this, as it is said to be filled up.

I was telegraphed to by the former purser to go and examine it and report; I did so, when he sent a second man, after which he abandoned the mine. It has been since taken up. I was applied to for a report, in which I stated fully how the mine should be worked in future. I am not aware if a company is formed, or if it is worked by any single individual, neither do I know who acts as manager. For the present, I only ask for an explanation as to who constitutes the company, and who is the manager; when I am most likely to come again, and ask them to clean their lead and let me see if it is enough to make two weights for an eight-day clock. They may as well publish my report with it. N. ENNOR.

Wadebridge, Sept. 3.

THE GREAT LODE AT TREGARDOCK, CORNWALL.

SIR,—Having been one of the shareholders in the Tregardock Mine, and on more than one occasion visited the property, induces me of late to watch the reports of the agents appearing in your most valuable Journal, and from which I am not surprised to find such good indications are presented. I have also noticed Mr. N. Ennor's remarks on the Great Lode, with Capt. Spargo's reply.

The former, I am convinced, has been writing at random, as he is sometimes accustomed to do, and I consider it quite unfair on the part of Mr. Ennor to make such assertions as he has without first having a proof of what is right. I am almost inclined to think Capt. Spargo would not have noticed his letter, as I imagine all who have read Mr. Ennor's communications hitherto cannot but believe that some of them are written for a selfish motive on his own part, with intended injury to others. As to Capt. Spargo, I have known him for many years, and he has been proved from youth a thorough practical and economical miner, indeed, I know of no better in the county of Cornwall. I shall in future continue to watch his reports of the mine, and should the property be made into a public company I most certainly shall take shares as far as my means will allow, and I fully believe nearly all, if not all, of the former shareholders will do likewise, having, I believe, great confidence as to the future of the property becoming very rich if fairly developed. AN ORIGINAL.

THE GREAT LODE AT TREGARDOCK MINE.

SIR,—Respecting Mr. Ennor's remarks on this mine, I must beg to say the greatest part of his letter is by no means grounded on facts. It is true the great lode he speaks of is open to view at surface, 64 fms. long, and not 200 fms., as stated by him, and it has been cut into a few fathoms down from surface in the side of the cliff, and found to be 10 ft. wide; but no one now living can remember the time when this work was done, and, as I stated in my last letter, there never has been 10*l.* spent in exploring on the lode until it was done by me. How many hundreds of years it has been open I cannot say, but perhaps Mr. Ennor may tell the very date when the water was turned into quartz, which the greatest part of this present lode is composed of on the point it is cut through. This mine has only been known to me for a year or two, although being well known by reputation; but a short time since a miner called on me in search of work, and, according to custom, I asked him where was the last mine he worked in? Under Capt. Goldsworthy, he answered, at Tregardock Mine; but that the mine was stopped all of a sudden, although he had made every preparation, in a proper miner-like manner, to work it at a deeper point, and ultimately fork out the old mine, which he was the last that worked in. He declared he never saw such a good thing abandoned before, and that the appearance of the lode in the bottom of the old mine was really cheering. Hearing such a favourable account of the mine, the next day I paid a visit, with him, to the spot, and, being convinced that his statements were correct, I took a walk around the sett, and was much struck with the appearance of this huge lode, some 60 fms. to the south of the old mine. I did my best to trace the continuance of the lode to the sea-beach, but found the beach covered with large boulders where I considered the lode had to pass. I gave it up for the day, and made up my mind to wait for a spring tide. The time arrived, and I took down with me a couple of miners, and began to blast up the rocks, and after some days' working discovered the lode. I dialled it on the beach for 70 fms. in length, and between tides I blasted some holes on it in three different places, and in two of the pits made the lode was worth 30*l.* per fathom for lead, which produced 60 and 70 ozs. of silver to the ton. I then, like any other miner would have done, took the longitudinal bearing of the lode, and struck my dial pin on the spot where the lode passed in the face of the cliff, where I some time after commenced driving on the coast of the lode inland, and although the lode at our first commencement only produced stones of lead occasionally, yet in a few fathoms driving it began to improve, which induced me to put down a shaft as near as I could to the face of the cliff, to prove its value underneath the beach. I got the shaft down 9 fms. deep under high-water mark, and found the deeper we went the lode was improving. I then advised my friends to prepare a proper plan of working, on a larger scale.

The mine has since gone into new hands, and the same level has recommenced driving, and I am glad to say the last three times taking down the lode has very much improved, producing large stones of solid lead, and we entertain a hope that by extending on this level to a split or branch, which we call the junction of No. 3, our labours will be crowned with success, but Mr. Ennor states in his letter that I had lost my dial, and had hauled my level to the North Sea, that the lode I was driving on had no part nor parcel with the lode he says was spotted with lead, that the lode he speaks of was south, and distinctly separate from that which we are now driving on, and that it continues the whole length of the sett as a powerful, masterly lode. Now, if Mr. Ennor can prove either of those statements to be true I will at once pay him down 20*l.*, but I am not going to be bothered with him without he pays me for my time and trouble in putting him right, and if he will pay me down 10*l.* I will take him at once—of course, that is to say if I am right. I have written Mr. Ennor a copy of the following letter:—

"MR. N. ENNOR:—Your remarks in the Supplement to the *Mining Journal* of Aug. 16 induced me to send you a copy of my dialling on the lodes here shown, and requesting you to prove they are laid down wrong, if possible you can do so, and that I have driven my level, and hauled it to the North Sea, and that the lode I am driving on has no part nor parcel with the lode you speak of spotted with lead, that is altogether south of that which we are driving on, and that it ran the whole length of the sett distinctly from what I call the main lode. Now, if you can prove this you will, of course, add power to your great name, because you are attacking a man who has had more than 50 years' experience in all his departments, not only as a working man but as an agent of nearly 28 years' experience, and has had the whole control of the use of the dial for all those years, and was never charged with a mistake in hauling shafts, winzes, rises, nor levels, &c.; and although I have yet more to learn, and should if I live 100 years longer, yet I am prepared to pay you down 20*l.* if you can prove me wrong; but, on the other hand, have you got benevolence enough in you should you be proved wrong to pay me 10*l.*? A 5*l.* note would pay your surveyor, and I am prepared to meet him at the mine any day you may appoint. You have now the plan of my dialling to hand over to your surveyor. I shall take no notice of anything you may forward on to the Journal until you prove yourself right, then you can write what you think proper. You say you will cut this lode for 50*l.*, which you say will be found a lead-bearing, paying lode, and that you had known it for 60 years; you tell the public that you are a miner, and one of the greatest in Cornwall, and that all of the agents who have been at Tregardock have been narrow-minded men; yet how narrow-minded you must have been to let slip a grant of such a mine as this, that for the outlay of 50*l.* you could be in possession of such a rich mine. But I rather think I know what you mean. The thing you consider is the continuance of the great south lode is what you see marked down on the plan as No. 3. This is nothing but a split, or branch, sprung from the lode we are now driving on, and only run inland 68 fms. If this is the one you mean, I will cut it for 5*l.* at sea-level. Do you know that in the central part of ths 68 fms. you would not have more than 5 fms. backs, and as for lead, there is not a blink to be seen in it at that point?

Stoke Climsland, Sept. 4. J. SPARGO.

THE RED RIVER—HOCKING v. VIVIAN.

SIR,—The action, brought as I believe under ill-advice, is of a very singular character, as a few facts will make it appear. Many years ago, Capt. J. Vivian obtained the promise of a lease of Roskadinnick, locally known by the name of "Puggis," which lease a few years ago was "signed, sealed, and delivered." In connection with that tenement he held a flour-mill and a tin-stamping mill, all under Mr. Baset Of course, the stream which usually turned the wheel was granted therewith. Subsequently Capt. Vivian took a lease of the same lord to stream for tin on the Red River, and for that work he used the water, when he found it necessary, that was wont to work the mill. In a dry summer the whole of the water coming down the valley was required for these works, and was not sufficient at times. In the same valley, above to South Frances and below to the sea, many other streamers are at work, but adjacent to Capt. Vivian's work the plaintiff Hocking has a grant to stream under the same lord, for which purpose he wanted the water previously leased to Vivian, who did not like to part with it. In consequence of this refusal, the action was brought as above stated. The cause was taken to the Bodmin last Assize, but it was only partially heard, it being agreed to refer the matter to the arbitrament of Mr. Kingdon, Q.C.

It was not, I hear, the wish of the defendant that it should be so referred, but the lawyers so arranged it. I do not pretend to a knowledge of all the details of the case, but it seems highly probable that Captain Vivian is entitled to the water to the extent of his requirements according to the leases.

Cartwright v. Vivian.—Of all actions brought for libel this is one of the most unfounded that I ever heard of. I enquired of a friend at Camborne as to the cause, and found it was as follows:—The defendant, Mr. Joseph Vivian, jun., met Mr. Basset with the plaintiff at Tehidy office on the subject of the Red River, when defendant said that it was rumoured that some persons connected with the Tehidy estate held shares with Hocking. "What do you mean by so saying?" said plaintiff. "Why, if you wish to know," said defendant, "people say that you have a share with him, and I believe it." This produced great umbrage, which resulted in the service of a writ on young Vivian, and this cause, too, was taken to the last Bodmin Assize, but withdrawn by plaintiff. Defendant was astonished to hear an apology made by his counsel without his sanction or previous knowledge. The legal gentry are sometimes eccentric. Apology! There was no more ground for that than for the action.—*Redruth, Sept. 3.* J. W.

MINING IN MONTGOMERY AND CARDIGAN.

SIR,—The discovery made some little time since in Esgair-hir Mine continues to improve in depth, and I am informed by the manager it is the intention to prosecute the mine in depth, the only true method of mining, and one, unfortunately, too little practised in this country. I note from the Journal that upwards of 150 tons of lead have been sold from this mine in three months—not bad for the short time the present people have been at work. I am informed, also, that at Blaen Caelan a portion of this lode has been cut, with very promising appearances, but in my opinion this is only a branch, and the cross-cut ought to be vigorously pushed on for another 30 fms. At the other extremity of this mineral district Dyliffe is also proving highly productive to the spirited adventurers, who took it up when everyone had abandoned it, simply because in one or two places the eyes had been picked out. I have no doubt but that as great a future lies before this mine as the past it so proudly and justly boasts of.

Between these great properties a large tract of land is being developed by the enterprise of one of two gentlemen, with, I am glad to add, every prospect of success. In Maelfadran they have opened up a rich deposit of copper, no doubt the back of a rich lead lode. At Esgairlyn there is at a shallow depth 1 ton of lead ore to the fathom; and again, at Cwm Tudor, the lode has been cut with every appearance favourable to the production of lead. These properties are being managed by Capt. Edward Williams, late of Dyliffe, and if anyone knows anything of this district he ought to, as it was in his time old Dyliffe turned out its wealth, and I am informed the present proprietors have very wisely consulted him before commencing operations. Cwm Byr, managed by Captain Nicholas Bray, is in a flourishing condition, having regular sales of ore. Between this mine and Esgair-hir is Talbot-drain Hyddgen, the property of the Mr. Edward Williams just mentioned, and Llochwedd-mawr, the property of one of the proprietors of the Glasllyn Mines. In all these properties very promising looking lodes have been opened up, giving every prospect of a great mining district when proper roads are made into it.

Now that the high price of coals is closing so many mines in Cornwall, and the disturbances in Spain are cutting off the supply of lead from that quarter, public attention must be directed to Welsh mining, and there is no doubt that there exists here a field for mining investment as good as any in England. Of the mines in the Rheidol district I know nothing, so must leave them to some of your other correspondents. The public may fairly invest their money in Welsh mining where the capital is not too large, and where the vendors take most of their purchase money in shares; but where a mine is sought to be saddled with from 30,000*l.* to 50,000*l.*, I would say beware! Such a capital is justified in old mines, where much money has been spent, and where large plants of machinery and good prospects exist; but when it is otherwise it is but a fair assumption to suppose that a large proportion of the capital is going into the pockets of some mining speculators. V. O. V.

"PEDESTRIAN," AND GREEN'S MINES AND MACHINERY.

SIR,—"Pedestrian," as well as "Maldwyn," is only repeating what he heard said, and to me it sounds very much like a discourse that I heard at Llanidloes, which is not a place in which to arrive at the facts of the merits of the Self-Acting Dressing Machinery. Admitting the machinery has been removed from one place to another, it does not follow that it has been remodelled or reconstructed. With the assistance of four men I have fixed five jiggers in eight hours, and in two days the whole machinery could be removed, which would cost but a trifle. As they were the first set ever constructed no doubt there was room for improvement as regards the situation, but the principles are still the same.

As to the Rhoswyddol Mine, I wish to refrain from making any remarks on it, merely saying that the former company's accounts cannot be examined; and it surprises me where "Pedestrian" could have found such a statement of accounts as that inserted in the Supplement to the Journal of Aug. 23. I cannot justify even "Pedestrian" reporting what he has heard said, unless he wishes to get himself into some little difficulty, which he may find it troublesome to get out of. My intention is to inform my mining friends that there was never a single ounce of silver extracted from Rhoswyddol ore before the introduction of the self-acting dressing machinery into the mine, and if it had not been for that the mine would have been abandoned. We are aware that the machinery is not capable of creating ore, as "Pedestrian" would have it do. What has the machinery to do with the productiveness of the lodes? What ore the stuff may contain it is capable of extracting almost free of cost. The Gertrude and the Great Darren are being carried on by a private gentleman, who may at his pleasure report them or not. I am able, however, to inform "Pedestrian" that the dressing machinery alone kept the latter mine going, by dressing the ore cheaply, and raising the price of it 3*l.* per ton, by extracting several ounces of silver per ton more than by the ordinary machinery.

At Pen-y-Cefn Mine there was a heap of skimpings. It was well known to contain ore, and many of the first ore dressers of the day tried to extract the ore from it. It could not have been done by the old dressing machinery to a profit, and there it had to remain for many years. At length the Self-Acting Dressing Machinery Company took the heap of stuff, and erected their own machinery at their own cost, in order to dress this old worthless (80 to speak of) heap, and in a few months they sold about 2000*l.* worth of ore. Now, if this machinery were in use at Pen-y-Cefn when the mine was at work it would not have been abandoned. The saving in the cost of dressing and the additional quantity of ore derived from the stuff would render a nice little profit. As to the lue and gogrfach, they may do very well in such mines as "Pedestrian" is connected with, but talking of using such playthings at such mines as Rhoswyddol, Gertrude, Great Darren, and Esgair Mwyn is a mere mockery.

T. P.

IMPROVEMENTS IN LEAD DRESSING—RHOSWYDDOL.

SIR,—"Pedestrian" says it is unmanly to prolong a discussion after an adversary has expressed a determination to retire, notwithstanding he does so prolong it, and thus establishes the unmanly character on himself. "Pedestrian," which is all I know of his name or of himself, except what he himself has written, asks me to prove that his remarks are untrue. Now, it is for him to prove them otherwise. He has made assertions, the inference and bearings of which I deny. It is, therefore, his duty to establish his own assertings, and not mine. He asks questions which I answer (not as he does, by saying it is not my business, which it really is) clearly and plain. No. 1, "Particulars of 18 to 20 tons of ore per month. Do they sell it, or does it go down the river." Sold June 9, 1873, 40 tons 2 qrs. Sold July 16, 20 tons. Sold Aug. 20 tons 14 cwts. It went to the Bury Port Smelting Company, and not down the river, as insinuated by veracious Nobody. Labour cost for dressing similar ore is 60 to 70 per cent. less than by the system formerly used at Rhoswyddol or any other mines then or now using the same implements under the same conditions as to richness of the orestuff, the only true criterion of test as to efficiency of the machinery, and which everybody, even ail, but the veriest novice thinks seems to know. "Particulars of the ton saved?" What a silly question! I estimate we save 5 per cent. by the exact action of our machine. If "Pedestrian" wants further particulars let him apply to the manager of the Greenside Mine, Cumberland, and Mr. Bainbridge, Middleton in Teesdale, &c., or let him go to the rivers where the old method is now being used, catch the waste and clean it, and then come to Rhoswyddol and do the same (in presence of creditable witnesses), and he will find I am right, as the gentlemen referred to will testify. Does "Pedestrian" want dressing machinery? If so, he should apply in something semblding a business-like manner, and I will give him prices that will astonish him for cheapness, being even cheaper, on the whole, in first cost alone than dear old rattletraps yclept machines he so admires and loves; and I will warrant all I supply for as long a time as he will keep an industrious man to oil, clean and attend to them, and not run about the hills attending to other people's business. In that case I will give no warranty at all, any more than I would a locomotive engine without a regulator. Any more questions, "Pedestrian?"

My dear Mr. "Pedestrian," what do you say in your last clause? What are you driving at? I do not know you. "Only resource?" What do you mean? What—but it does not matter. See what your friend "Maldwyn" has done for you and himself at the same time. How very funny you both are! "Maldwyn" says he only gave Mr. Davies's version of the matter. Is it Mr. Davies's version to say that the patent dressing machines absorbed the capital of the company, leaving nothing for underground operations? I simply do not believe it. Mr. Davies neither would or could give any such version. Was it his version that the machines had become a total wreck, and that they were found inadequate for the work, and is it is version now to say that they are at last brought to a state of great efficiency? Such are "Maldwyn's" own statements, and the last we are told is the version of all unprejudiced persons. Therefore, "Maldwyn" stands self-convicted of prejudice and misrepresentation, which, in his kindness to Mr. Davies, he saddles that gentleman with. It would be interminable to follow "Maldwyn" in his desperation, as it would be mere repetition. I will only refer to his figures, which so conspicuously show his determination to mislead. He says if he fills the estimates can be corrected, and then puts down cost of Rhoswyddol dressing at 4000*l.*, when the whole outlay for construction did not exceed that sum, which includes 1½ mile of tramroads, 30 or 40 tram wagons, incline gear, tipplers, &c., with steam engine for picking floors and stone breaker, auxiliary steam-engine for crusher, &c., steam-engine for drawing, buildings that "Maldwyn" could not make for 1500*l.*, 45-ft. water wheel by 4 ft. breast, 38 in. crusher, arching over the whole length of dressing-floors, &c., which all unprejudiced persons will say covers very little for patent machinery, and which in reality did not cost one-fifth of the sum which "Pedestrian" and "Maldwyn" are so assiduous-ly endeavouring to persuade the public to believe. I only refer to this to show the utter worthlessness of their statements, and which are based either on unconquerable prejudice, profound ignorance of facts, an obstinate determination to mislead, or all combined. Again I ask, who are you, "Maldwyn" and "Pedestrian?" Give your names, and perhaps the world will be informed whether your "endless mechanical blunders" have resulted in great efficiency, or whether you have performed the marvellous feat of "getting stopes yards in advance of levels." Who can tell what would result? Having done this, perhaps even you might gain credit for what others have done—why not? However, this cannot be what you fear. Your aim is something else, and the hornet's nest you speak of affords what is more likely to be the true idea. Hornet's nest did you too say, "Maldwyn?" No, it is the bee's nest that both of you are trying to force yourselves into, and you have met the fate which all those do when they wish to eat of the fruit of the bees' patient and enduring toil, and which they so richly deserve. In the flights of your verdant imaginations you assert Mr. Dunn to be my mouthpiece. Note, he only spoke for himself, and now also I shall not fail, as I have not to contradict falsehoods which affect myself, come from what quarter they may. Having thus unfortunately dropped into the bees' nest, doubtless you have got tolerably well stung. GEORGE GREEN.

RHOSWYDDOL MINE, AND PATENT DRESSING MACHINERY.

SIR,—Whilst reading Mr. Dunn's last letter I was almost led to believe that in the hurry to extricate myself from the meshes of his lengthy effusion, that appeared in the Supplement to the Journal of Aug. 15, I had overlooked some point of vital importance, for this week he informs us that in my last letter he sees nothing to invalidate what he had already said, more especially in his second letter. After again carefully perusing this second letter, and subjecting it to a winnowing operation, I find that the incontrovertable truths to which he invites attention are the following:—

1.—Did Rhoswyddol when rich, and while labouring under the various disadvantages already mentioned, pay reasonable dividends? And does it now, while poor, with its automatous machines, and every improved appliance for transit, &c., make little profits? In reply, I will refer him and his colleague, "Cymro," to my last letter, where if this point is not proved to their satisfaction I doubt not it will be to the unbiassed readers, whom I must here inform that if he intends to prove it by figures he must add another 25 tons to the bulk there stated, as such a quantity has been sold, or at least sampled, since I wrote that letter, but even that amount added will not turn the scales.

2.—That Mr. Green is a genius, and has made for himself a name, and also machines for posterity. Whether this is an incontrovertable truth I leave it to the readers of the Journal to decide.

3.—Have the "Elaborate dressing machines" proved a "saviour" or been "nearly fatal" to the mine (*vide* Supplement, page 787); this subject has been pretty well ventilated on one side, whereas, although we have been promised full particulars, in a "tabulated comparison of costs," &c., and expenditure, I hope by the other it is not yet forthcoming, therefore, as heretofore, we must labour in "mental darkness" to again illuminate the subject; thus we find that lead ore has been raised and sold from the mine, that in comparison to the number of men employed was, or at least ought to have been very near, enough to pay the underground labour cost; this then being the case, where has the capital subscribed to work the mine been absorbed? for we have it on good authority that the original has all been spent, and fresh capital subscribed. Thus, then, it is plain if the mine has not had it, the elaborate floors must, and until we have proof to the contrary we will take it for granted to be a fact, and thus prove that instead of saving and assisting the mine they have been existing partly on its vitals.

Now a word as to the cost of the "elaborate dressing-machines," although if the Messrs. Green and Dunn had looked at my letter more carefully they would have found it "elaborate dressing floors" (*vide* Supplement, page 871); and I always understood the term "floors," in mining phraseology, to include both waterwheels, grushers, stamps, and even the building that covers them. But doubtless it suited their purpose best to put their own construction upon it. Well, we will let it be so, and see how they correspond. Mr. Green, in his letter (*vide* Supplement, page 930), states that the "elaborate machinery, since its erection, has saved in dressing alone more than double its entire cost." Mr. Dunn, in his letter (*vide* Supplement, page 890), states that the patent machines," since their erection at Rhoswyddol, "have paid for themselves five times over." How are we to reconcile these statements? If one is right the other must be wrong. Which, then, is the "incontrovertible truth?" "Where doctors differ, who is to decide?" One thing, perhaps, in Mr. Dunn's favour will be that when making his calculations he was not aware (as his connection with the mine is but very recent) that there had been a row of "celebrated classifiers," with a set of "patent percussion tables," once upon a time upon the Rhoswyddol dressing floors; but as we are told he has had such "considerable experience" with the automatic system, he ought to be acquainted with the whole routine of the process, therefore blunders are inexcusable. And now, while we are at it—as, with all our trying, we cannot get to know from them—we might as well ascertain the actual cost of the floors—at least, the "patent machines." Up to present date they have dressed at Rhoswyddol (say, in round numbers, 6000*l.* worth of ore, and by dressing this amount they have saved (according to Mr. Green's statement) more than double their entire cost. Let those who are about to put up machinery work this out, and try if Mr. Green will erect for them at the price.

4.—Mr. Dunn says we have yet to learn that the ore from the neighbouring mines, Llanerchyrwr and Caelan, realised 20*s.* to 30*s.* per ton more than the Rhoswyddol ore. If he will compare the prices obtained by these mines with his own he will find it is a fact. Moreover, a stone of lead taken from each of the three mines (they are all on the same lode) and assayed, it will be, and has been, found that they contain nearly the same constituents.

5.—As Mr. Dunn asserts that their mine, that is the part I alluded to, is being worked by a series of drifts, that is sufficient to prove that at least that part of my "misleading letter" was true, and, therefore, need not be dilated upon.

And now, Sir, I trust that I have proved to your readers, if not to Mr. Dunn and Co., that my remarks were neither "superstitious fances" nor "random guesses," and before terminating let me ask him if he cares to answer this—to give us a few facts that he can prove, rather than dilating upon other people's letters, and construing them into "untruths" or "misleading guesses," as his own whimsical imagination may suggest.

Also, before terminating, I would again beg a small space, Mr. Editor, for a few

...es in reply to "Cymro's" last effusion, which for egotism surpasses any that I ...ve ever yet read in the Journal. We are told that he has carefully dissected my ...sions, "but for the life of him" he cannot "pick up anything but vague as- ...tions." "Cymro," I believe, is gifted a little with one virtue—truthfulness, for ...ations your readers will agree with me that a greater heap of "vague assertions ...e never conglomerated than his last effusion.

He has also made a great discovery—that the tone of my last two letters indi- ...d a desire to close this controversy. If his intellect was in any way keen, he ...ould have discovered that in the first letter of all, for in a few words there do I ...ise him that "least said is soonest mended." And I may tell him that I would ...ve rather long since had he and his colleagues been a little more courteous and ...fined in their expressions. I must apologise, Mr. Editor, for having encroached ...considerably upon your valuable space, and hope that by next week I may again ...able to resume my rambles, which change, doubtless, will be quite as agreeable ...asy of your readers as it is to me.—*Sept.* 2. PEDESTRIAN.

BRONFLOYD MINE, AND ITS MANAGEMENT.

SIR,—Much of late having been said respecting Bronfloyd and its ...anagement, will you kindly allow me a small space to contradict ...pt. Davis's statements, which appeared in last week's Journal? ...hen the accident took place to the crusher on Dec. 31, 1871, there ...as no stuff crushed from that time up to the second week in Feb., ...ee, during which time we were drawing ore stuff, some days two cores of eight ...ore each, and other days one core: in consequence the upper floor was literally ...acked up with ore stuff—in fact, there was not even room to put another core's ...orning, and I am sure at the least calculation possible there was 50 tons of ore in ...e heap. Let me ask what has become of it? If all the ore which was broken ...underground was brought to surface, and made marketable, it would be 150 tons, ...ead of the 50 tons at surface: total, 200 tons—as before stated. As to the rise ...ing up against No. 3 shaft, a mistake did occur, and no further explanation is ...quired on this point. Respecting the last draft sunk at No. 3 shaft, a contract ...as set to six men, to cut plat, put in penthouse, and to do all work preparatory ...o sinking, and to sink the same 16 fms. for the sum of 250*l.* or 255*l.* When the ...sinking was commenced the bottom of the shaft was 1 fm. 2 ft. under the 84, and ...when the men to complete this bargain the depth of the shaft from the bottom of the ...plat should be 17 fms. 2 ft., so Capt. Davis says that when he took charge of the ...mines it was 15 fms. 4 ft. 2 in.; and taking his figures, there remains 1 fm. 1 ft. ...3 in. to be sunk, not 1 ft. 10 in. as he states. I left the mine in the middle of ...January, 1872, and the sinking was not completed before the beginning of April, ...as stated in my former letter. If the shaft was not carried down in a straight line ...no blunder was committed towards the bottom under his supervision.

...After the sales of ore during my management, I have again to remind him that ...he dressed 75 tons of ore in six weeks for a considerable time, which will make ...about 75 tons per month, at a cost not over 250*l.*, as can be seen by the cost-book, and this ...was not broken in clay-slate ground, as he states, but in ground in places al- ...most as hard as adamant; he also complains of the price of labour owing to the ...scarcity of men: when I left the mine there were as good a staff of miners as the ...country could produce, and had they been treated in a proper manner they would ...have been there until this day. During my time the average gettings was 3*l.* 10*s.* ...per month, and I suppose Captain Davis does not pay much more now, so he has ...nothing to complain of on this score. He also makes further statements that I ...ought to have taken the advantage of driving levels; this I have done so far as ...could or any man of common sense would have done. The 40 end is extended ...to the north lode 80 fathoms, or thereabouts, to the west of No. 3 shaft, and through- ...out this extension the lode was nothing but soft clay-slate; and about 10 fathoms ...behind the forebreast a cross-cut has been driven through the lode 17 fathoms; the ...ground at this point is of the same character as before stated, and before it will be ...favourable for ore the lode must go through an entire change. Barton's cross-cut ...to the 32, east of No. 2 shaft, is also driven through the north lode, about 35 fathoms ...to the west of the bunch of ore around No. 3 shaft, and a level has been extended ...out of cross-cut 13 fathoms on the north part, which is poor, and the lode here ...must go through a change before it will make lead. Balcombe's cross-cut at the ...32 was stated in my time, which was much against my inclination, but I had to ...carry out instructions for the purpose of cutting the south lode. What has been dis- ...covered here? Nothing but junctions of lodes. As he states, no doubt he will find ...out the secrets presently; really I am sorry that all the unprofitable work of ex- ...tending levels and cutting the hard rock has come to his lot, but I hope he will ...yet make a discovery, that I may congratulate him. The fact of it is, Captain ...Davis appears to have been disappointed in the mine from the commencement up ...to the present time, and it appears all his statements are based on imaginary visions.

Pednovagh, Sept. 4. THOMAS KEMP.

THE FLAGSTAFF, LAST CHANCE, AND TECOMA MINES.

SIR,—The many senseless rumours circulated concerning these ...mines are so transparent in their object that one would have thought ...the most inexperienced of shareholders would pass them by un- ...noticed; but the price to which the shares in these mines have been ...forced would lead to the belief that statements, however opposed ...to facts, thrown broadcast among a body of proprietors, find some ...who are ready and willing to accept such as at least having some ...foundation. It is singular how the minds of shareholders seem ever ...open to receive unauthorised depreciatory statements from perfect ...strangers, and the more such statements are directed to the injury of the particular ...concern in which they are interested, the more easily are they swallowed. ...Culpable parties not only injuriously affect the market value of their own pro- ...perty, but also that of those who have yet to learn that there is such a thing as an ...honest disinterestedness called into existence by the merest speculators, for the ...special behoof of shareholders in associated enterprise.

...The Flagstaff Company has done more than any other mine in Utah; it has ...paid in dividends in about 18 months nearly 50 per cent. of the amount at ...which the project was capitalised; it has constructed furnaces, purchased teams, ...provided ample plant, and, besides otherwise developing the mine, sunk the shaft ...to a depth of 450 ft., opening out large reserves, and establishing the property as ...a most profitable one. But because in doing this, which no other mine has hitherto ...accomplished, some easily remedied financial disorganisation has resulted, to pre- ...vent the recurrence of which it is proposed to pay in future quarterly in lieu of ...monthly dividends, all sorts of lugubrious visions are created. The most implicit ...confidence is placed in all rumours set on foot by detractors, although the execu- ...tive, in whom, as you have recently observed, a well merited confidence should be ...placed, state most unequivocally that neither the position nor prospects of the mine ...were at any time so satisfactory as now. Certainly such large results were ...never before realised.

...The Last Chance has not only done more than was ever expected of it, or pro- ...mised it would do, but is now yielding a larger amount of bullion than at any time ...since it became the property of the English company: in truth, the present rate is ...equal to dividends of 60 or 70 per cent. upon the capital. Beyond this, we have ...the independent testimony of one of your correspondents in Utah, who, in a letter ...published a fortnight or three weeks since, states most emphatically that "Last ...Chance will prove itself equal to Flagstaff."

...The Tecoma has been depreciated in market value because the first dividend was ...not paid within four months after the company obtained possession of the pro- ...perty. True, the Chairman at the statutory meeting led the shareholders to believe ...that such would be done; but is no allowance to be made for delay in the develop- ...ment of a mine in an entirely new district, where great and unforeseen difficulties ...are sure to arise? In well-known and well-tried mining localities unlooked for and ...vexatious hindrances occur; and is it in any way surprising that unavoidable dis- ...appointments should arise in connection with Tecoma? Your large experience in ...all such matters causes you to look for such delays. You observed, I noticed last ...week, that "no news seems to be regarded as bad news, whereas the opposite may ...yet prove to be the case." The very richness of the Tecoma ore appears to be the ...stumbling block to an immediate success—its great value was shown by the first ...run of the furnaces, the bullion being valued at 180*l.* per ton. Do the demented ...shareholders who, upon the advice of others, frantically dispose of their shares at ...any price they will realise, imagine that the exceptionally valuable ore already ...treated is all that remains in the Tecoma Mines? Do they suppose that Captain ...Forbes and Mr. Maxwell have lent themselves to a deliberate and wicked misre- ...presentation? Do they for one moment think that the large reserves which Mr. ...Maxwell carefully measured in the Shanley and Gladstone Mines exist only in ...that expert's imagination? Are all the experienced correspondents who have in- ...spected and reported upon the district, and especially on the mines upon Shanley ...Hill, of which the Shanley Mine is the chief, are all these combined in a conspiracy ...to deceive and betray the shareholders in the Tecoma Company? Are the asto- ...nishing results realised from the American Tecoma Company a financial delusion, ...and does the president of that incorporation pay large dividends to its stock- ...holders for the purpose of leading the shareholders in the English Tecoma Com- ...pany into the vain belief that they possess a mine, although the mine does not exist?

...Shareholders! do not allow yourselves to be thus hoodwinked by those whose ...only object is to force down the price of your shares, so as to make handsome pro- ...fits, which means your loss.—*London, Sept.* 2. A SHAREHOLDER.

FLAGSTAFF, LAST CHANCE, AND TECOMA SILVER MINES.

SIR,—My object in writing to you on the above mines in last ...Saturday's Journal was to show that no parallel could be drawn be- ...tween the case of the Emma Mine and those three mines, as the former ...was a collapse in the full sense of the word, whereas those mines ...never did better, never turned out more ore, or displayed a larger ...quantity of it than at the time the monthly dividend ceased, with ...the view of commencing the quarterly and the better system. Such ...are the facts, which we cannot doubt, unless we assume that Mr. ...Maxwell has been guilty of the crime of making up false reports from ...the mines, which few could be capable of entertaining. No one has yet questioned ...that gentleman's integrity or ability. In this letter I beg to direct attention to the ...conduct of the directors. I regret to say that I think the mines deserved to have ...had men better qualified to manage them than those now in office. For instance, ...they have not published the weekly or monthly expenses as well as the value of the ...ore turned out, so as to let the shareholders know that which they do want to know ...most particularly—the net profit per month. Why not? is the question put by ...every one—let the directors answer. If they do know, they are guilty of withhold- ...ing the truth, and thereby laying themselves open to the greatest suspicions. If ...they do not know, then they are guilty of culpable ignorance, and deserve to be set ...aside for able and better managers. And now what do they propose to do?—to send ...maps "Containing plans and sections of the Flagstaff Mine" to the shareholders! ...What folly—nay, rather what mockery! What a useless expenditure of paper—...who can understand such maps, which may be manufactured into anything? If ...Mr. Maxwell's reports cannot be trusted, how will drawings of the mine help to ...confirm the faith of the shareholders? We protest against such folly—it is costly, ...useless, and may be construed into a desire to blind people and divert them from ...insisting on having the real facts placed before them. We want to know the net ...profits, and shall not accept maps of the mines as a substitute.

...The reports from the mines as to the extraordinary value of the runs causes ...surprise at the payment of a dividend having ceased this month so suddenly, and ...without the slightest intimation having been given three months ago to that effect. ...Of course such singular inconsistences cannot fail to create distrust and apprehen- ...sion. I believe they are capable of being satisfactorily explained, for that reason ...the silence on the part of the directors is most blameworthy. Again, why did they ...raise the Flagstaff dividend from 4*s.* to 5*s.* per share at the end of the first twelve ...months? The fact of their not paying the September dividend proves that that ...step was as unjustifiable as it was, assuredly, uncalled for. It was a most unwise ...proceeding, and one liable to be misconstrued to the cost of the shareholders.

It is high time to call a meeting of the shareholders, and to explain the true position of matters in order to restore confidence. It is because the writer has faith in the mines that he urges his brother shareholders to do all they can to bring about a meeting.—*Sept.* 3. A SHAREHOLDER.

PERKINS BEACH MINE.

SIR,—Thanks to "Celt" for his letters on the above mine. I was much perplexed by Capt. Waters's last report, which, to say the least of it, was a perfect contrast to the one he gave when the present company was inaugurated; but when read in the light of recent attempts to divide the Perkins Beach sett, and form an East Tankerville Company, I think I can discern its meaning. I hope our directors have given up that idea; let the shareholders, if it should be necessary, take up the remaining shares, and let the mine be managed with vigour and judgement, then I for one will not fear the results. CAMBRIAN.

NANT-Y-RICKET MINE.

SIR,—Will any of your readers, or someone who is connected with this mine, kindly inform me through the columns of your valuable Journal what is being done at it at present. When I was in that neighbourhood in the autumn of 1869 I visited the mine, and was shown by the then manager (who I understood was the discoverer of all the lodes on the sett, which is a very extensive one) two very rich lodes of copper, upon which he was at that time driving levels into the side of the hill from the River Severn. I do not remember ever having seen richer lodes of copper than those two lodes were at that time. The mine was then worked by a private company, the manager being one of them, and it occurred to me at that time when I was looking at both those very rich lodes of copper, some sections of which were actually ranging from 3 in. to 18 in. wide of pure copper ore, and I was assured by the manager would average from 18 to 22 per cent. for copper, that if Nant-y-Ricket had then been a public company, instead of as then a private one, it would have been one of the most desirable mines that I had seen for a great length of time to hold shares in; nor have I, indeed, in all my mining peregrinations seen anything with finer future prospects as I thought Nant-y-Ricket had at that time. I was also shown a very beautiful north and south lead lode, from which the manager had taken some very fine specimens of lead; this latter lode he informed me would intersect the copper lodes by driving south upon the course of it into the hill at an angle of about 45°; and, judging from the very great amount of backs that would be gained by so doing, as well as the intersection of both the copper lodes, as well as two other lead lodes which the industrious, plodding captain pointed out to me, it occurred to me that of course if a public company was made upon Nant-y Ricket that their very first object would be to drive an adit level from the river side on the course of the north and south lode, so as to take advantage of the above natural facilities.

Nature had evidently done all its work in a very complete manner at Nant-y-Ricket, having provided the place with ample water-power, an immense high hill, through which the numerous lodes of lead and copper run, with a beautiful place sloped out at the foot of the mountain on the side of the Severn, which might be easily taken advantage of, and undoubtedly has been taken advantage of long ere this, by erecting the most modern and improved dressing machinery, with ample floors and slime-pits, all of which such a property as Nant-y-Ricket so eminently deserves. However, whether this has been done or not, I find the mine has been made into a company of 5*l.* shares, but although I have made several enquiries in the City respecting it I cannot get any information about the company or the mine, nor do I ever see any reports of the mine in the Journal. Will anybody, therefore, kindly inform me if the mine has been abandoned for want of capital or some other untoward circumstance, or has it still the small breath of life in it?

Perhaps the gentleman who was manager of the mine when I visited it (for I found in him a very courteous and intelligent man, and one who evidently thoroughly understood the nature and capacities of that country) will perhaps take the trouble, and oblige myself and friends (if he is still there or anywhere in that neighbourhood), by letting us know what has been done at Nant-y-Ricket, and what kind of dressing machinery erected, also what number of fathoms has been driven on each of the copper lodes, and with what result, since 1869. Are the two copper lodes as rich now as they were then, and has an adit level been driven upon the Big Lead north and south lode, and, if so, have they intersected either or both (with it) of the copper lodes, and also what discoveries have been made in the driving, and how many men have they employed during the last 12 months?

Clapton, Sept. 4. MINING ADVENTURER.

SOUTH TOLCARNE MINE, CORNWALL.

SIR,—In my letter on this subject in the Supplement to last week's Journal, it is stated that "When the sinking of the engine-shaft is completed to the 45 fm. level, 2 fathoms below the present bottom," &c., which is not correct. It should have been, "When the sinking of the engine-shaft is completed to the 57 fathom level, 45 fathoms below the present bottom, and which is now being rapidly carried on, South Tolcarne property, will be a richer mine than its neighbour; the discoveries in the latter rendering the prospects in the former a certainty."

I might add that the end of the South Condurrow lode driving on it is daily improving in value as it gets further away from the influence of the cross course, and that South Tolcarne bids fair to become one of the prizes on the market for progressive mines, from the certainty of having all the lodes of its powerful neighbours. A KNOWING ONE.

NEW ROSEWARNE MANAGEMENT.

SIR,—There are but two statements in the last letter of "Interested" worthy of my notice. The first is that "Every ton of stuff spalled on the mine for the last pay cost 7½*d.* to spall," whereas the truth is that the cost was as near as possible 5*d.*, including the taking and bruising all the samples, the weighing, and the wages of the man who overlooks it, and the copper dressing. The average for the past three months is below the figure I have stated. The spalling alone is not 4*d.* per ton. To set the spalling in this mine would not do, as there is killas and poor stuff with the lode that requires to be well picked. Coals are too dear now to stamp what does not contain tin.

The second statement of "Interested" is that "The carriage of tinstuff for the month was 25*l.*, exclusive of two one-horse carts carrying at so much per ton." The truth is that the whole of the tinstuff has been carted to the stamps for 3½*d.* per ton, and none carried on any other conditions whatever. The whole carriage of tinstone is not 10*l.* per month. It is true that when we were excavating for dressing plant and building burning houses we had several carts at work, but we had to cart off hundreds of cubic fathoms of ground, and we have in the last four months built two burning-houses, with nearly 400 perch of masonry beside in arsenic chambers, flues, &c., the stone, clay, &c., all brought by carts. I do not claim to be "infallible," but I have ever had the full confidence of my employers, or I should not have been where I am. It would be useless for me to make a statement here contrary to truth, as the books would confute me. JOHN JAMES.

New Rosewarne Mine, Sept. 3.

[For remainder of Original Correspondence see to-day's Journal.]

PERKINS BEACH MINE—SPECIAL REPORT.

Talargoch Mine, near Rhyl, Aug. 22.—I now tender you my report of Perkins Beach Mine, which by your orders I carefully inspected yesterday. Great spar lode, through which the adit level passes, and across from the same to Cross's lode, require no remarks at this time from me, as nothing new has been done in it since my former visit. In travelling east on Cross's lode I came to the junction of pump sump lode with Gwilliam's north lode, which north lode and pump sump are one, now called south-west breast at the deep adit. From this lode the present company, I am informed, has taken most of their ore, and this forebreast I consider should be extended, as there is a nice leader of lead ore against the hanging wall, and fine branches of ore in the stone of the forebreast. On this level a few yards back, east of the forebreast, is the Chimney Pipe rise, which has been for upwards of 70 ft. hard and poor, after which the lode has expanded, and become rich for lead ore, and I compute its value to be 7 tons per fathom, with every sign of continuance, and every probability of improvement. From the present appearance of the ground, and by the direction it takes now, it will go north-east of the engine-shaft. On Green Hill Mountain there are 400 or 500 ft. for working on before it reaches grass—indeed this is a very promising run of ore.

The South Cross: By this cross-cut three lodes have been discovered. The south cross I consider to be a most excellent piece of work for the development of the south part of this mine, inasmuch as I find four lodes have been discovered in it—First, Gwilliam's south lode, which is a very promising lode, and on which a sump has been sunk from middle adit through to deep adit, on south cross: this underlies south: 7½ fathoms from this lode is Walker's lode, sunk upon about 25 fms., from which several tons of excellent ore have been taken. Also a rise has been upon this lode on its pick about 30 fms. high, and a short cross from middle adit would intersect and ventilate it. This lode I saw when I was, at your request, inspecting this mine before. Gwilliam's south underlies south, and Walker's lode underlying north, and only 7½ fathoms apart, must form a junction at a reasonable depth, at which point we reasonably expect an increased quantity of ore. About 50 fathoms due south the pitch lode has been intersected, which, in my opinion, is of a very good character, and worth opening both east and west, as the ground is very promising. About 40 fathoms further south the white stone lode is cut; this is a very strong lode, about 2 fathoms wide, mixed with small lead, and interspered with spar throughout, and I believe it to be a good lode, well deserving a trial, and would expect improvement by opening it out more. This south cross-cut has been driven upwards of 10 fms. from this lode, and I should very strongly recommend driving this on, as I firmly believe the great spar lode is before, and from the appearance of the present forebreast the great spar lode, or some other lode, is close by, for in the forebreast now there is change of ground, being driven through thin layers of stone, and it has reached hard solid rock, which, in my opinion, will form the hading side of the lode. The present discoveries of lodes in this south cross-cut must, in my mind, be very valuable items for the further development of this mine; without this cross such information would never have been obtained.

In travelling through the easterly part of the mine I find many valuable runs of ore-bearing ground, which in sinking the present engine-shaft would be more speedily developed, and at a considerable less cost, than any new engine-shaft on any other part of this mine. I should recommend sinking 30 fms. on the present one, which then will be 100 fathoms perpendicular from surface, and must give on the runs of the lodes 150 fathoms of backs, and proper levels I anticipate will be successful in crossing these caunters at such a depth, and should it be so the company can then arrange for a new shaft for deeper developments in the best place they could select at that time. I noticed the north-east drivage, on No. 3 caunter, to intersect Nos. 1 and 2, in the strength of the Green Hill, out of which old workers had most of the ore. When I speak of the deep adit you will remember that the workings in South Cross at this depth give backs of about 300 yards in the hades of the lodes, and the north-east drivage would give perpendicular backs of about 200 yards, and when the lodes are reached in the heart of the mountain of course much greater backs on their hade, so that the depth is really great. I consider in this sett you have a valuable piece of mining property that ought now to rank among the best mines in this district, and in my deliberate opinion does so.—GOODMAN ELLIS.

We observe that Messrs. Bryant and May have been awarded a "Medal of Merit" at Vienna, for their well-known patent safety matches, vestas, &c.

THE IRON AND STEEL INSTITUTE OF GREAT BRITAIN—No. III.

DISCUSSION ON BUTTGENBACH'S BLAST-FURNACE.

Mr. Jones, of Jones Brothers, Middlesborough, said he should like to know the inclination from the boshes upwards in Mr. Buttgenbach's furnace—that was, the difference between the diameter of the furnace at the bosh and the diameter at the top. He should like also to know what advantages there were to be derived from the pillars of stone over the columns that were used in Cleveland for supporting the superstructure. Mr. Buttgenbach said he had taken away the hoops intended for the support of the body of the furnace. Now, their experience in Cleveland was that they could not do without that support. But there was this difference to be observed, that the furnace here was only 50 ft. in height, whereas in Cleveland the furnaces were double that height. He thought that any advantage in this furnace arose more from the difference between the size of the bosh and the diameter of the top than from any other reason.

Mr. Williams, manager for Bolckow, Vaughan, and Company, said—I don't know whether I correctly understood that the thickness of the brickwork in this case was something like 2 ft. I think that with a furnace of anything like the capacity of those of the North of England there would be no hope of a furnace so thin keeping together. I don't think that a wall 2 ft. thick, unsupported by anything, would keep its shape or position with 32,000 cubic feet of material within it. One of the advantages claimed for this furnace is that the brickwork is comeatable, and that there is no casing interposing to prevent the replacement of any portion of the furnace itself. This is the case with the greater number of our furnaces in Cleveland. We have brick furnaces, simply hooped here and there, 4 ft. 6 in. to 4 ft. 9 in. thick, and all the advantages claimed for this furnace, in respect of being able to take out the bricks and put in others while the furnace is at work, apply equally to the furnaces of Cleveland, but we don't often require to do that. The stone foundation here is, I think, very objectionable. There cannot be a doubt in my mind that the system of cast-iron columns is very much superior either to such pillars of stone as we have in furnaces of this kind, or even to the old brick pillars that were usual with us, and are still used, to some extent, in the North of England. I think that the mass of masonry about this furnace, the difficulty of getting at the tuyeres, and the inconvenience of increasing the distance between the stones and the tuyeres, are great disadvantages, and I am of opinion that the system now current in the North of cast-iron columns, will be much better than the system here proposed. For myself, I don't see that there is in the Buttgenbach furnace anything that the Cleveland ironmakers can, with advantage, copy in their own district. (Hear, hear.)

Prof. Jordan, of Paris, who was introduced to the meeting by Mr. Bell as an eminent metallurgist, said he wished to say something on some blast-furnaces built in France about five years ago. Two of these furnaces were hooped from 18 in. upwards, and they were set against a hill. The galleys were employed on the hill, and the steam-boilers were also placed there. The hollow columns for the girders were replaced by light cast-iron columns for supporting the platform. These furnaces have been at work—one for four years, and one for two years. One was making spiegeleisen, and one was making grey iron. No. 1 from pure iron ores. The two furnaces are worked with a very hot driving, and the system has never given any trouble. It had been found very convenient for repairs, and it was for that reason principally that the system was employed, because the manganiferous ores were very corrosive, and it was very convenient to replace the work in the vicinity of the top. The cup and cone had not been well constructed, and the bricks in the vicinity of the cone had been worn away by the ore, and the system enabled the bricks to be replaced in the vicinity of the platform. There was another furnace in France built last year, which had been working for five months together, making a very fine grey iron, No. 1, with a grain of the best Scotch pig. This fact was interesting because he had found some engineers afraid of the cooling of the slack by the air. He thought that the cooling by the air was not to be feared. Some engineers, also, were afraid of the gas through the brickwork, but he had paid some attention to this matter, and he had never seen the gas escaping. He had, indeed, seen one furnace in which the rain had passed through the bricks to the interior during the winter, when they had 40 days of rain. This furnace was new, and the manager had not tarred the exterior. This was a very important matter in a country or district where there is a heavy rainfall.

Mr. Thomas Whitwell said there were one or two points which, as coming from a district where they made upwards of 1,800,000 tons of pig-iron per annum, he should like to refer to. The furnace that they had heard of was being applied to the use of a small mine, raw, and often charged with water. In Cleveland they used calcined stone, and the gas went off at from 300° to 400° centigrade, in place of going off at 140°, as they did in the Buttgenbach furnace. He had no doubt that the Buttenbach furnace would work well where this fine mine was employed, as the heat is much more readily taken up, and the system of washing the gas by passing it over water, as they had seen the previous day at Ougrée Works, answered well with gas at a low temperature; but in gas with a high temperature it was to be feared that in place of condensing the steam in the gas they would make steam, and put it into the gas; and in that case he did not see that the system of Mr. Buttgenbach would be suitable where they had calcined ironstone to deal with, and especially when it went into the furnace nearly red hot. He would like to ask if there was any economy of coke special to this form of gas furnace. There was no doubt that the system of charging described by Mr. Buttgenbach gave the best system of charging they had yet seen, because they always saw the minerals. He had no doubt that the system would work so far as the distribution was concerned as perfectly as any furnace could work. It was chiefly, however, upon the matter of the ironstone going in in large masses, and the action of large masses of ironstone upon the sides of the furnace, that he should like information, as they found that the large masses of ironstone used in the North of England, coming from the calcined furnace has a great effect in corroding the sides of the blast-furnace.

The President of the Institute noticed that when they blew down a furnace the whole fabric appeared to be subjected to a very high temperature; but they must not allow themselves to be misled by these appearances, because all that scarification took place, not during the working, but by the intense temperature during the operation of blowing the furnace down. Most of them had had the opportunity of looking into a blast-furnace whilst working. The last one constructed at Port Clarence had a series of doors pierced through the sides, and having had these opened, they could know the amount of heat. So far as the heat was concerned, there need be no fear of scaffolding taking place from the high temperature in that part of the furnace. Mr. Buttgenbach also attached some importance to the introduction of blast at different levels after the furnace had stood for some time. Well, that was an abnormal state of matters, and when, unfortunately, that state of affairs did arise it was, perhaps, easier to pierce the side of the furnace to get the blast introduced than to have recourse to the tuyeres. Although they looked upon the cooling of the water as a matter of little moment, yet it meant a great deal of heat absorption, and he thought that the less of that they dealt with in the structure the better. If he was correct in supposing that the top of furnace was cool, as he had just stated, and not in a state of semi-fusion, then the supposition that these walls could be applied to furnaces of a great altitude was not well founded. After all, the great question, and one that had only been incidentally touched upon, was what were the merits of the furnace as regards its performance. It was quite easy to devise countless forms of blast-furnaces, but the question was are they better than the old? Considering the work performed by the furnace, they had first to deal with economy of fuel. That was the only question that presented any importance in their eyes, and he had not learned that in this respect the Buttgenbach possessed any great advantage over those of their own country. (Hear, hear.) Mr. Buttgenbach seemed to attach great importance to facility of

repairs, and no doubt in a wall 18 in. thick, in the event of any part of it giving way, one could easily get at it; but their furnaces were driven as long as it was possible to drive them economically, having regard to the condition of their lower parts. He never heard of a furnace being blown out because the cone had got into a state of disrepair. He had no doubt they might go on for a long time patching up a furnace where, perhaps, the state of trade rendered it a matter of great inconvenience to blow the furnace out, and after a certain amount of erosion had taken place in its lower part it was, as a matter of economy, better to blow it out sooner than they did. Mr. Buttgenbach had spoken of one of his furnaces that had been in blast for eight years; but Mr. Whitwell had a furnace that had been blowing for eleven years; the Clarence furnaces had been blowing, six, seven, and eight years; and they did not find any inconvenience from it; while Mr. Neilson, of Summerlee Works, had a furnace that had been blowing for thirteen years. In what Mr. Buttgenbach said as to the danger of heating with gases at a high temperature he (Mr. Bell) entirely concurred. Whatever amount of work they could do with the gas as now used would be much lessened by using a great quantity of vapour. They were much obliged to Mr. Buttgenbach for bringing his furnace before them. (Hear, hear.)

THE EXCURSIONS—*(Continued).*

Probably no more interesting works are to be found in Belgium, after those of the Société John Cockerill and Co., than the blast furnaces, rolling mills, and collieries of Ougrée. These works date from the year 1836, and are situated about six miles from Liége, on the left bank of the Meuse. There are only four blast-furnaces in operation, all of them having square bases, and being in other respects what English ironmasters would call old-fashioned. Their height is about 40 ft., and they each produce from 30 to 40 tons per 24 hours. They make a very excellent quality of pig, some specimens of it shown to us containing as much as 5 per cent. of manganese. Every ironmaster knows that up to a certain limit the more manganese he can get in his iron the better, as it evaporates in the process of manufacture, and carries off in this way, impurities that would otherwise remain in the iron. The arrangement of the Ougrée Works is very convenient. The coal is carried by an overhead line of rails from the colliery to the coke ovens, a distance of about 200 yards. There are 36 ovens on Appolt's system, and 80 on the old-fashioned plan. For the former there is a little engine used for pulverising the coal, which remains 24 hours in the coking chambers. They are charged and discharged simply. The coke ovens are only a few yards from the blast-furnaces on the one side, while on the other there are sheds for mixing and preparing the ore for blast-furnace purposes. This is done by first breaking up the ore into small pieces about the size of an egg, and then mixing them in their due proportions. We could not get at the exact proportions of the charge used for the furnace; but the ordinary consumption of coke varies from 1800 to 2000 tons per 1000 tons of puddled bar. There is a rolling mill immediately contiguous to the blast-furnaces; but the malleable department proper is situated about a quarter of a mile from the blast-furnaces, and is separated from them by the village of Ougrée, in which most of the workmen of the company reside. It may be well to add, however, before leaving the blast-furnaces, that they are actuated by three blowing-engines—one to each furnace in blast, and the largest one, which is really a fine engine, was made by the Société John Cockerill and Company. The diameter of the steam-cylinder of this engine is one metre 20 centimetres. The blowing-cylinder is placed on the top of the engine, instead of alongside, and its diameter is 2½ metres. All the waste gases of the furnaces are collected in a tube 2½ metres in diameter, which runs along the whole length of the furnaces, and conveys the gases to the heaters and boilers. The heaters are not much unlike those used in Scotland and Staffordshire. The boilers are horizontal, and are built round about to prevent radiation of heat. The heat of the air in the blast-furnace is 250° to 300°. In the rolling mill contiguous to the blast-furnaces there are 12 puddling-furnaces, a large steam-hammer, and a squeezer of rather singular construction. There are three pairs of rolls in operation, being driven by an engine of 30-horse power, made by Cockerill and Company, and numbered 1533. In the rolling-mills proper visitors saw plate-rolling and tyre making. Louth's three high rolls were used for the former purpose, and seemed to answer exceedingly well. There are few works in Great Britain that have adopted this system to anything like a large extent, but in Philadelphia and other parts of the United States it is almost the only mode of rolling made use of. The great advantage of this plan is that the plates can be rolled and re-rolled without turning over, and at a single heat, whereas by the usual mode it requires two heats to produce a finished sheet. The rolls were moved by a lever lift, worked by a rope turning round a pulley on the roll shaft. This worked against a pulley overhead by a strap attached to the lever, and when the slab had passed through the rolls the attendant boy pulled the rope tight on the pulley, which caused it to lift up high enough to go over the rolls. One of the most interesting features of these works was a gas furnace, modelled partly after the style of Siemens' regenerative air-furnace, and partly after the furnace with which the name of Wilson is identified. The gas generator is, however, placed close to the furnace, so that the gas does not want regenerating, as in the Siemens' furnace. The air combined with the gas is heated under the bottom of the furnace. Furnaces of somewhat similar construction were erected some years ago at the Thornaby Ironworks, near Middlesborough, but difficulties with the men, who declared that they could not work them, led to their abandonment. This furnace at Ougrée has merely been erected experimentally for re-heating slabs previous to their being rolled. Much interest was manifested in the skilful manner in which tyre are rolled at Ougrée. After being drawn into a coil and re-heated, they were brought out and welded under the hammer previous to being rolled into a perfect tyre. When rolling was accomplished, the tyres was put on to a mandrill and sunk into a water-butt. Three mandrills are sufficient to keep the rolling mill going. It is almost unnecessary to add with reference to the visit to Ougrée that here, as elsewhere, visitors received a hearty reception, and were treated with the most unstinted hospitality.

A short distance from Ougrée are the zinc works of Messrs. Mesdach and Company, but as zinc does not properly belong to the manufacture of iron and steel, only a small number went out of their way to pay these works a visit. Those to who took this trouble were amply compensated in the result. They are really excellent works, with a great number of double retorts, and contiguous pots in which the zinc is distilled. The ores used are what metallurgists know as calamine or carbonate of zinc. At Swansea and other centres of the zinc industry of Great Britain, sulphate of zinc is the ore chiefly used. The latter ore requires to be calcined in order to eliminate the sulphur, but calamine is independent of this process, so that in one important respect, at least, the zinc manufacturers of Belgium have an advantage over those of England. As for the process of manufacture it is nearly analogous in both countries.

Between the zinc works of Messrs. Mesdach and Company and the Ougrée Works there is a new steel manufactory, belonging to Messrs. F. De Rossins, Pastor, and Company. The managing partner of this concern is M. Pastor, who was formerly at the head of the Bessemer steel making department of the Cockerill Works, at Seraing. The Angleur Works are only of limited extent. Two Bessemer converters are at present in operation, and it is intended to erect two others, a large building being in course of erection for their reception. There was no specially noteworthy feature about the works. The machinery was mostly of English manufacture; and it was a somewhat significant fact that Cumberland hematite was largely made use of along with spiegeleisen for the manufacture of the steel.

The only other works that could be visited by the majority of the members were those of the Société Anonyme de Selessin, and the blast-furnaces, coke ovens, and coal-washing apparatus of the Société de l'Esperance at Seraing. Several other collieries in the neighbourhood of Liége were visited, but about all of them there was much identity of feature. A very interesting excursion had been arranged for Thursday to the works of Messrs. Jowa-Delheid and Company to the plate and sheet mills of the Société Anonyme de l'Esperance, to the works of Messrs. Fetu and Deliege, and to the works of the Société des Chantiers de la Meuse. On account, however, of the universal compliance with the invitation of the King to visit Brussels on Thursday, this excursion had to be abandoned, and only comparatively few compensated themselves for their disappointment by visiting on the following day the coalworks of M. D'Andrimont, the largest and most complete colliery establishment in the Liége district. The most unique feature of this establishment is the great hotel, at which most of M. D'Andrimont's workmen reside. It is arranged on an excellent principle, which many of our coalmasters might imitate with advantage. The Hotel Louise contains beds for 200 workmen, each of whom pays 1 fr. 20 cents. per day for both board and lodging. There is provision for both recreation and education in connexion with the hotel, a casino supplying the one, and night schools the other. The strict conditions as to meals, &c., under which the hotel is carried on provides for the health of the miner a safeguard which is seldom found in England, where every man is free to do as he likes, and not unfrequently dissipates all his means, and otherwise enervates a constitution that ought to be kept up to the highest point of efficiency in order to cope with the unwholesome character of his daily toil. The hotel was opened in June of last year; and since then it has never failed to secure the confidence and approval of the workmen. The underground workings of the Hassard collieries are 135 yards from the surface, although at one part the workings have been sunk to a depth of 235 yards, over 600 men are employed, and the quantity of coal raised averages 500 to 550 tons per day.

DUDLEY MINING INSTITUTE.

A special monthly meeting of the South Staffordshire and East Worcestershire Institute of Mining Engineers was held on Monday, under the presidency of Mr. William North, ex-President. There were about 40 members present. A new rule was unanimously passed restricting the admission of new members to coal and iron masters, mining and civil engineers, surveyors, and certificated colliery managers.

The CHAIRMAN said he understood the trip to the Wigan coal field was a great treat to the members of the Institute; and, although not present himself, it gave him pleasure to propose a vote of thanks to those gentlemen who received them so splendidly and hospitably. The motion was seconded, and cordially and unanimously adopted.

Mr. WALTER NESS, who is now resigning his membership, and about to take a Government post in India, explained to the meeting the working of Baird and Firth's Coal-Cutting Machine, put in operation under his superintendence at the Pelsall Coal and Iron Company's Colliery, and which is the only coal-cutting machine successfully put to work in the South Staffordshire coal field. He gave the members a hearty welcome to pay him a visit on Monday next to see its working, and to say good-bye before his departure to his new scenes of operation. This kind invitation was accepted, and it was arranged that the members should leave Walsall station by the 11:30 A.M. train on Monday for Pelsall.

Mr. W. Thorton, Dudley, and Mr. Michael Harte (Mr. Ness's successor) were nominated ordinary members.

MINERS' ASSOCIATION OF CORNWALL AND DEVON.

The annual meeting of the Miners' Association of Cornwall and Devon was held on Thursday, Aug. 28, in the Polytechnic Hall, Falmouth. Mr. BASSET, of Tehidy (the President), occupied the chair; and there was a large attendance, including Messrs. A. P. Vivian, M.P., C. Fox, H. Fox, R. W. Fox, F.R.S., Capts. Provis, Bryant, Tregay, Oats, Pearce, Dr. C. Le Neve Foster, J. P. Bennetts, Richard Taylor, N. Sara, Rev. S. Rogers, Rev. E. Berthon, C. Taylor, A. Taylor, W. R. Roebuck, John Hocking, Wm. Argall, E. Borlase, Thos. Lean, J. Tregaskis, A. R. Barnett, J. Barnet, T. B. Provis, W. Simmonds, T. Warrington, J. Toman, two Brahmin gentlemen who are at present studying mining in England—C. Sabapathi Tyah and C. Meenacshaya Tyah; Mr. J. H. Collins, F.G.S., hon. sec., and Mr. B. Kitto, lecturer.

The report of the Council was read by Mr. J. H. COLLINS, and stated that several changes had been made in the list of officers of the association. Mr. Hunt had resigned the office of honorary secretary, which he had occupied from the commencement of the society with so much advantage to its interests. Mr. Collins, the second honorary secretary, would supply his place. Mr. Pike, the treasurer, having resigned, Mr. W. M. Grylls had been elected to fill his place; and the executive council had been strengthened by the addition of Mr. Roebuck and Dr. Le Neve Foster. The council had to regret the loss of one subscriber, Mr. Peter, of Chiverton; but Dr. Foster and Mr. R. Taylor had become life members; and Mr. Roebuck and Sir Morton Peto had become subscribers of 5*l.* 5*s.* It was recommended that both these gentlemen should be elected members of the council. Attention was called to the elvan prizes offered by Mr. J. A. Phillips, F.C.S., and Mr. C. Fox thanked for the gift of a large number of copies of the Supplement of the *Mining Journal*. The *Mining Journal* prizes had been awarded to—Chemistry, A. T. Davies, St. Agnes; Mineralogy, T. H. Allen, Camborne; Geology, C. Paul, St. Just; Mining, H. Eddy, Pendeen. The funds of the society were still inadequate to its work, and it was hoped that new subscribers would be forthcoming to supply the deficiency. From the lecturer's report it would be seen that the work of the association on teaching had not been allowed to slacken, the total number of passes being 96, against 101 in 1872. Thanks were especially tendered to Mr. Roebuck, as representing the Cornish Consolidated Iron Mines Corporation, for the liberal manner in which the pupils were received on the occasion of the recent excursion.—This, with the report of the lecturer, Mr. Kitto, which was exceedingly satisfactory, was adopted without comment.

The PRESIDENT briefly opened the proceedings by referring to the exceeding usefulness of the association, and the inadequate manner in which it was supported. Certainly the smallness of their funds enabled them to prove how much good could be done with a very small amount of money. He felt, however, that if the value of the association was properly recognised its funds would be very greatly increased. People could not be aware of the value of the association or they would support it far more liberally. He believed the time would come when that would be the case.

Mr. R. TAYLOR read the first paper, which was by Mr. Jordan, and entitled "On Recent Improvements in the Construction and Setting of Jordan's Patent Combination Boiler." In 1865 Mr. Jordan arranged a steam-boiler to meet the varied requirements of foreign mining, which consists of vertical tubes 9 in. diameter and 7 ft. long, each being the equivalent of a nominal horse-power. A great number are in successful operation at home and abroad. Time and experience have suggested improvements, which the author in this paper desired to bring under the notice of those interested in the progress of water tube boilers, which he believed must be the steam-boilers of the future. The greater safety and the high efficiency of water tube boilers when well constructed were no longer matters of dispute. They would evaporate 10 lbs. of water with 1 lb. of coal; and by the well known law of pressure if a boiler of 5 ft. 3 in. diameter in its best condition was safe at 100 lbs. per inch, one of 9 in. diameter of the same material would be safe at 700. Little more than one half the thickness would give a working strength of about 400. The imperfections which Mr. Jordan has sought to remedy are—waste of heat by radiation from furnace, and consequent injury to furnace front and crown; want of sufficient steam space and water surface, and consequent tendency to prime; difficulty of cleaning, and other inconveniences arising from the central rod. The chief alteration made is in the situation of the furnace, and the introduction of a separator or steam-chest, which effectually stops the destructive action of the fire on the furnace front, and avoids the loss of effect from radiation. It brings the whole of the fire nearer to the water tubes, affords a great y increased water surface, and gives the increase of steam room required to avoid priming.

There was a brief discussion upon this paper.—Mr. SARA thought that the introduction of the steam-chest was really returning to the old Cornish boiler.

Mr. TAYLOR explained that this was not so. The boiler had been preferred to the Cornish boilers by mine managers abroad, because of its superior safety, as well as because of its efficiency. He knew of one case in which a mine captain had preferred to send to England for one of Jordan's boilers, although he had a new Cornish boiler within a few miles. Upon one occasion when one of the tubes was short of water the only result was that the lead melted and the steam escaped.

Mr. A. P. VIVIAN enquired what the cost of the boiler was?—Mr. TAYLOR replied that it was slightly in excess of that of an ordinary boiler, but not much.

Mr. J. H. COLLINS, F.G.S., then read a paper on the "Great Perran Iron Lode," which ran as follows:—It appears to be the characteristic of Cornwall to have great faith in its existing works and industries, but very little in those which are as yet undeveloped. Thus Sir Walter Raleigh, while Lord-Warden of the Stannaries, is said to have reported to Queen Elizabeth that the copper ores of Cornwall were of little value; and Carew mentions that little was raised, and with what gain to the adventures he had not been able to discover. Yet we know that the estimates formed by these extremely well-informed men were afterwards found inconsistent with the facts; for the copper ores raised in Cornwall and West Devon increased yearly in value, and in 18·6 the value was considerably over a million and a quarter sterling. A similar illustration is afforded by the china-clay industry. These instances are, I think, precisely parallel in the present condition of iron mining in Cornwall. Mr. Henwood, Sir H. de la Beche, and others described the great Perran iron lode 40 years ago in the clearest way. Yet among the miners of Cornwall some do not believe there is any considerable quantity of iron ore there or in the county; others doubt as to the quality; nearly all assert that it cannot be worked at a profit. I believe that these are all wrong, that the quantity is enormous, the quality mostly all that can be desired, and that very large profits are to be made by working the ores. Iron in Cornwall always occurs in lodes, and these are very numerous, and often astonishingly persistent. Many are known to extend several miles in a direct line, and the depth to which the ore holds is quite unknown. In many respects, however, the Perran lode differs from most of the others—especially in direction, size, underlie, and nature of its contents. The Cornish iron lodes have generally a direction a few degrees west of north, and are perhaps 3 ft. wide, underlie less than 1 ft. in a fathom, and contain either red or brown hematite. On the other hand the Perran lode bears about 35° N. of W., averages perhaps 30 ft. in width for a course of several miles, underlie from 3 to 4 ft. in a fathom, and contains large quantities of carbonate of iron or spathose iron ore. It is first seen on the cliff, as stated by Mr. Henwood, in Ligger Bay, and there it is above 101 ft. wide, consisting of two great branches, divided by a horse of killas. From here it may be easily traced inland for a distance of 4 miles to Deerpark, where it takes a turn—at first directly east, and afterwards some degrees north of east, so proceeding in a curve as far, it is said, as Grampound—a distance of about 12 miles. It is, however, of little value, so far as is yet known, after the first 4 miles, and my remarks will relate solely to this portion. The first excavation is but a short distance inland, at the Penhall Mine, where the lode is perhaps 60 ft. wide, consisting of red and brown hematite, spathic iron, quartz, and a few imperfectly crystallised garnets. This great width is said to be maintained for a distance of about 100 fms. on the course of the lode, and for something like 12 fathoms in depth, after which the lode splits up and narrows to a few feet only, consisting in the narrow portion of a blue clay or flookan, with blende, galena, and pyrites. The next excavations of importance are at Gravel hill, about ¼ mile further inland, where several large openings have been made; and the lode is found to be very large in places, and to consist a few fathoms below the surface of very pure spathose iron ore. Still further on, and nearly 1 mile inland, at the Mount Mine, is a very large quantity of excellent ore extending for a distance, I believe, of about 200 fathoms, and about 3 fathoms wide. Some of the ore here is of very superior quality, and I am told that it is being raised from a depth of 20 fathoms. Half a mile further on—at Treamble—is a large excavation, which is in one place at least 30 fathoms wide, if not more. Here, too, spathose iron is visible at a moderate depth, but the ore near the surface consists largely of that kind of hematite known as kidney iron. The works here are being carried on in a most thorough manner by the manager, Mr. Muller, who is simultaneously constructing a branch from the Fowey and Newquay section of the Cornwall Mineral Railway to this spot. He has already lying at surface about 7000 tons of excellent ore waiting for the completion of the railway. The mass of ore here is so great that it is intended to work it in open quarry below the rail level, raising the ore by an incline on the corner of the lode. Still proceeding inland, at Great Retallack the lode is found to be several fathoms wide, and to make very near the surface. At one point it has been sunk upon to a depth of 40 fathoms by former workers. It was found to be rich for iron for 25 fathoms, and afterwards for blende. A little further, at Wheal Duchy and Peru, the lode has been sunk upon to a depth of about 50 fathoms; this is about 2 miles from the cliff, and here the Cornwall Consolidated Iron Mining Company has sunk two fine new shafts, and erected a very good engine for pumping and hauling since February. The lode near the surface consists of a loose ochreous mass of brown hematite, but at a moderate depth it changes to spathose iron ore of a very peculiar cellular appearance, which is slightly sprinkled with chalropyrites and galena. The galena seems to increase as the depth reached is greater. At 20 fathoms from the surface is a remarkable "hot chamber" in which hot water rises, but in a former working very warm water was found to rise from a lode in the bottom. This was supposed at the time to be due to the oxidation of a great mass of iron pyrites. A little more than 1 mile further on, at Wheal Peru park, there are extensive excavations, and no doubt large quantities of ore will be brought to the surface as soon as the railway communication is completed. In common with several other geologists who have visited the lode, I believe it to be nothing else than a gigantic gossan on the back of a lode of copper or lead. The whole mass of ore near the surface was at one time probably spathose, but now contaminated with pyrites. This has oxidised into brown hematite, much heat being given off in the process, and this heat has not only favoured the alteration of the carbonate into oxide, but has converted the brown or hydrated oxide in places into red or anhydrous oxide. In the occasional occurrence of considerable masses of copper, lead, and zinc ores, we have, I think, indications that the lode in depth will consist chiefly of the ores of these more valuable metals; and if so, I believe it will be a richer series of mines than Cornwall has yet known. Be this as it may, the present proprietors have here a very rich property, as the slightest consideration will show. The average produce of the Cornish tin ores is only about 30*l.* of black tin per ton of stuff—the value in the stone being about 20*s.* For 20*l.* there be any considerable quantity, miners are content to raise the stuff in average depths of 100 to 150 fathoms, to pay all the expense of draining the deep mines, and to subject the ore to a most elaborate and costly series of stamping and dressing operations. Here, on the other hand, the ore is close to the surface in very large quantities, 6*d.* or 1*s.* per ton will pay for all the dressing required in most cases, and the value free on board will vary from 25*s.* to 30*s.* per ton—at any rate not less than 20*s.* at the brace of the shaft. I have hinted at the probability of the lode turning to some still more valuable ore in depth. Another source of riches must not be overlooked. It is crossed by several well-known lead lodes, and these are almost invariably very rich in silver near the point of intersection. Mr. Henwood has shown that the galena at Trebiskon Green in 1866 70 yielded an average of 366 ounces troy of silver per ton. Very similar intersections occur at the Mount Mine and at Great Retallack. The iron lode is here apparently intersected by a large elvan course, and by the Wheal Peru lead lode. At the point of intersection a mass of native silver was found some years since, directly against the iron lode. I think it will be difficult for any person who now visits the mines, and from Deerpark to the sea, to avoid the conviction that a great success awaits the present proprietors—their plans are very extensive, and the energy and the talent with which they are being carried out must be witnessed to be believed.

Mr. ROEBUCK, of the Cornish Consolidated Copper Mining Company, who was asked to speak, said he had nothing to add to the excellent paper of Mr. Collins.

Mr. J. HOCKING, C.E., read the next paper, which was upon the duty of Cornish engines, and dealt with the most important question of the great decline in engine duty. He pointed out that the average duty 30 years ago of the Cornish pumping-engine was 69 millions, against 50·2 now. In fact, 30 per cent. more coal was used now than there was 30 years ago to do the same work. He believed the lower duty was chiefly due to the lower rate of expansion, but he did not think the high rate of expansion would be resumed; secondly, he held that the boiler power was insufficient; thirdly, that the engineemen were often inefficient, and that premiums should be offered for saving coal; fourthly, that by the present system of working the same amount of duty could not possibly be reached; fifthly, that the coal was of much lower quality. A number of engines, likewise, were very old. Mr. Hocking strongly urged the offering premiums to engineemen to save coals. The best engine working in 1842 was Taylor's, at the United Mines, which did 129 millions; the best now, at Crenver and Abraham, did 65 millions.

Capt. LEAN said that premiums for saving coal were given at Dolcoath, and with excellent results.

Mr. R. TAYLOR remarked that they were all greatly indebted to Mr. Hocking for his valuable paper. The subject had come under discussion at the meeting of the Institution of Mechanical Engineers at Penzance. There was some difficulty for awhile there in getting the Cornish engineers to speak out, but at length they did, and he was very glad that Mr. Hocking had carried the matter further. At the time when the very high duties of which mention had been made were reached the matter was generally left in the hands of the engineer to provide the best engine possible. He thoroughly approved of the proposal to give the engineemen premiums for the saving of coal, and held that duty reporting should be general. The cost was the veriest trifle in comparison with the benefits to be derived.

Mr. A. P. VIVIAN spoke highly of the Cornish engine, and called attention to the necessity of providing sufficient boiler power. He quite agreed with the scheme of rewards for economy of fuel. It would answer in Cornwall, but in some works it would not, for the only result would be that the engineemen would appropriate their neighbours' coal to save their own. The locomotive drivers on the Great Western Railway used to help themselves to the coals of his firm as they were sent by rail; but he got over that by whitewashing the top of the trucks. Coal ought to be analysed before it was bought, and it should not be purchased merely because it was black.

Dr. C. LE NEVE FOSTER, the Government Mines Inspector, next explained in a short paper the mode in which concrete was used in the Harz for making leats and water-courses. He believed the plan might be followed in many cases in England. The concrete was made of cement and skimpings mixed dry, and the leats were formed by movable frames.

Mr. A. TAYLOR then read another very valuable paper for Mr. Jordan, entitled "Further Notices on Rock Drilling Machinery," which embodied some exceedingly valuable information. In the paper Mr. Jordan supplemented the remarks made by him upon this subject last year, with some account of experience gained and improvements made since that date. He was glad to find that this important subject was growing into public favour. A series of experiments had been carried on at Wheal Friendship, under the writer's direction for Messrs. Taylor to determine the relative speed of hand and machine boring, and to make a full examination of the working powers of Sach's borer, the German stands, his own tubular stand, and his own hydraulic air-pump. These experiments were of great value in determining the elements of progress. Sach's borer had been tried in every kind of rock that could be obtained, and made to do satisfactory work in all. The weak point of this instrument was its liability to rapid wear in its many-jointed gearing. The undue play thus produced in the several joints puts the slide valve out of adjustment, and consequently the machine had frequently to return to the fitting shop. Nevertheless, it was an ingeniously contrived and well-constructed machine capable of doing good and rapid work so long as it retained its original perfection. At 25 lbs. pressure it made about 400 blows per minute, and bored 1¼ in. holes in granite at the rate of 3 in. per minute, whilst a slight increase of pressure made the rate 4 in. The problem of how to construct a machine capable of drilling rock rapidly in any direction, under all the conditions of mining, was not fully worked out. Complicated valves and gearing had been the fruitful sources of trouble and expense in various machines; but at length the remedy had been found in the simple process of leaving them out. Darlington's rock drill was without a valve of any kind, and it had no substitute or equivalent for a valve—hence it was without the internal or external gearing requisite for moving a valve, and alternating the pressure to opposite sides of the piston. The most simple machine that would do the work was the best. Darlington's was without packing of any kind; the gland was in one casting with the cylinder, and the piston and its rod which carried the borer was one forging. There was a cover fixed with four bolts on the top of the cylinder, and a recess in this contained the ratchet-wheel and detents on the head of a spiral bar, which turned the borer. The bar was rifled with three grooves, so as to turn the piston about a sixteenth part of a revolution in the up-stroke. It fitted into a corresponding rifled nut cut in the piston. The bar was prevented from turning when the up-stroke was made, but during the down-stroke the rod turned freely in the cover, and took a new position ready for again turning the tool in the same direction by the next up stroke. The acting part of the machine—that which made 1000 strokes per minute, of sufficient force to enter the hardest granite at from 3 to 6 in. per minute—really consisted only of two parts (one the cylinder and cover, and the other the piston and rod), one fixed and one moving part, less than which it was impossible to obtain. The borer was fixed in the holder in a peculiar and thoroughly efficient manner, as the result of experience. Darlington's drill was not fitted with any automatic action to advance the machine as the hole deepened. The forwarding screw worked in a nest formed in the cylinder, casting the whole length of the cylinder. Mr. Jordan then went on to refer to the borer stand which he had designed. His object had been to devise an apparatus which could be moved by one man, fixed in any direction, used in a shaft or level, independent of tramways, and capable of resisting any blow the machine could strike. Experience had proved that the tubular construction which he had adopted answered these objects. With this plant one man took the machine, and another the stand, to carry them

out of the way of shots. The first cost was not one-fourth of that of the German universal stand. In order to compress air Mr. Jordan had suggested and adopted at Wheal Friendship the direct use of a column of water. He had also designed for Messrs. John Taylor and Co. an air compressing pump, to be driven by a stray power at the same shaft. This would be of more general application, and its cost about the same—about half that now charged for compressors of the same capacity in use in France and Germany. The air main for driving one or two machines would not be more than 1½ in. diameter for 1000 ft. of length. He much preferred the wrought-iron tubes screwed together. Mr. Jordan doubted the policy of having the air-pumps into the workings, and driving them by men or horses. Among the advantages of the other course. Another thing it would do away with the ventilation of the question of power be left out of sight. The employment of men or horses in air compression would be absurdly retrograde.

Time did not permit of the discussion of this paper nor of the reading of any notes, and it was announced that the remainder would appear in the report. The proceedings then concluded with a vote of thanks to Mr. Basset, moved by Mr. VIVIAN, and seconded by Mr. C. Fox.

The papers not read included one by Dr. Foster, on "Gold Washing in Italy;" one by Messrs. Letcher and Mitchell, on Cornish pitwork; one by Mr. J. J. Roberts, on certain geological phenomena in Wales; and one by Mr. J. T. Rowe, of Redruth, on the condensation of poisonous gases and the fumes of sulphur and arsenic—the practical value of this paper induces us to furnish an abstract. Mr. Rowe said he made no pretensions to a discovery, but simply introduced a new arrangement in the light of an improvement in the ordinary means employed for bringing objectionable gaseous products into direct contact with water, without interfering with draught. His principle had been applied to the burning houses at the Stray Park Mine, now occupied by the adventurers of Carn Camborne, the gaseous products of which had been so objectionable that litigation arose. The case having been referred to Mr. Rowe for arbitration, he set to work to abate the nuisance if possible, and still to enable the calcining operations to be carried on. His first object was to reduce the temperature of the horizontal flues so low as to condense the volatilised arsenic into solid arsenious acid. This was accomplished by building additional chambers in the course of the flues. The next object was to deal with the sulphurous acid gas, and the products of the combustion of the ores. To effect this he constructed a tower 16 ft. high, and 5 ft. by 3 within, divided by a septum, or partition, into an upcast and a downcast shaft—the former 2 ft. by 2, the latter 3 ft. by 3. These dimensions were, of course, the result of careful calculation as to the volume of gases to be dealt with. The tower rested on the walls of the horizontal flue at its junction with the chimney-stack, into which an opening was made—2 ft. square—to carry the waste air, and so maintain the draught. The gaseous products were, by displacement of air, and consequent pressure, driven by falling water down the downcast shaft, the water being delivered from a series of shower boxes fed by funnels from without, so contrived as to prevent an escape of the ascending gases. In the shaft below the shower boxes at desired distances were set drip-racks, formed of triangular bars of wood, the sides at acute angles upwards. Each rack being set in an opposite direction, and at right angles, the effect of the whole arrangement was that the tower was filled from top to bottom with a dense spray. Thus the gases were washed, cooled, condensed, and absorbed by the water, which was collected in a well at the bottom of the condenser, and discharged into a pond. Here the carbonaceous matter settled, and the gases by chemical affinity and action being decomposed were rendered harmless. The water was afterwards used for dressing burnt ores The temperature in the chimney-stack was only eight degrees above that of the outer air.

Meetings of Public Companies.

THE ISLAY LEAD MINING COMPANY.

The second ordinary general meeting of shareholders was held on Tuesday, at the company's offices, 62, Cornhill,

Mr. W. S. MAPPIN in the chair.

The notice calling the meeting was read by Mr. GEORGE SEARLE GARDNER (the secretary), who also read a report which had been received from Mr. H. B. Vercoe, the manager.

The CHAIRMAN said he was very pleased indeed to again meet the shareholders in connection with this property. The captain, in his report, had stated that in about a month he would cut the lode in the 45fm. level, which the directors really looked upon as the richest part of the mine. He (the Chairman) was happy to say that the directors had received the following telegram from Captain Vercoe, dated from the mine, on the previous evening:—"Cut lode in 45 fathom level last night: cannot give value, not opened on enough, but looks well; splendid lump stuff." He might say that he himself visited the mine on Aug. 12, and he yesterday presented a report to the directors; and perhaps he could not do better than read that report to the shareholders:—

STEAM-ENGINE.—The steam-engine was working most satisfactorily, making 10 strokes per minute with a pressure of 8½ lbs. of steam. On another occasion the steam was 11½ lbs. pressure. I found the alterations that were necessary to get the pumping and winding gear were executed in a most substantial and workman-like manner. Before, however, it can be worked economically some arrangement must be made to work it at high pressure. This can be effected by sinking a water-cistern in the ground, at a cost of 20*l*. to 30*l*. near the engine-house. The whole of the water from the mine will then be pumped into it for the use of the boilers and condensing tank. It may also be effected by having another pumping barrel and clack piece for the bottom lift of pumps; the whole of the water will then be raised to the surface into the condensing tank, and the surplus water will be allowed to go down the mine again to cool, and then pumped up a second time. This plan will give a little extra work for the pumps. Capt. Vercoe informed me that the difference between working the engine at high and low pressure will be a saving of at least one-third in the consumption of fuel in favour of high pressure. The engine is now pumping, and raising 15 tons of ore per day, and of sufficient power to do the work of the mine with the proposed extensions. The engine house, boiler house, and chimney-stack are substantially built.

PUMPS.—The new pumps are working most satisfactorily, but there requires a good working barrel at the 45 fm. level, which will dispense with the necessity of working the pumps during the night. This I would recommend should be obtained at once. The shears, balance-bob, travelling-bob, and all the woodwork connected with the pumping and winding machinery are entirely new, and of the most substantial make, and reflects great credit on both the pitman, smith, and carpenter. Vercoe, the whole having been made on the mine. The skip, skip-road, and all the arrangements for raising the ore are completed, and are of the same substantial character.

CRUSHING MACHINERY.—The crushing-mill, which is worked by the water-wheel, requires some repairs and alterations before any large quantities of ore can be prepared for sale, the necessary instructions for which I gave Capt. Vercoe. I would also remark that, in consequence of the unreliable supply of water for the water-wheel, other means must be adopted before continuous and satisfactory quantities of ore can be prepared for market.

UNDERGROUND.—I inspected the whole of the underground workings in company with Capt. Vercoe. In the 15 north there is a good stope, worth 15*l*. per fm., which is now being worked upon. In the 25 south, on the north and south lode, there is a stope worth 10*l*. per fathom, but at present we have not sufficient men to work in this and other places. In the same level we have some men at work driving south, opening up fresh ground. In the 35 west, on the east and west lode, we have a stope worth 15*l*. per fathom, with four men at work. On the north of the north and south lode, in this level, we have a stope worth 12*l*. per fathom. The 35 cross-cuts levels are at present our most productive workings. In the 45 we put four men at work whilst I was at the mine. They are driving on a most promising lode, and Capt. Vercoe, as well as the men, expect in about 2 fms. more to reach some splendid ore. Having seen the whole of these workings, I may at once state that the above valuations, which are given by Capt. Vercoe, might, I believe, in many case be increased, the fault, if any, of Capt. Vercoe's estimates being that they are too low. There is at the present time in the mine at least 200 tons of ore broken and ready for raising, which will produce from 50 to 75 tons of lead, which is being brought to the surface at the rate of about 15 tons per day.

ORE FOR SALE.—Although the crushing mill is not working so satisfactorily as could wish, it is nevertheless preparing lead for sale, and there was in the shed about 12 to 15 tons ready for market, and in the course of a week or ten days this quantity will be increased to 20 tons, so that we may now shortly expect the first sale of our undertaking.

COTTAGES.—This is a matter that must soon be taken into consideration. We are at the present time only accommodation for from 20 to 25 men, which is altogether inadequate for the mine. I have made arrangements for two more cottages, that will accommodate four or six more men. These, I am informed, are all that are available within a reasonable distance of the mine. There will be no difficulty in obtaining good miners, but we must provide cottages for them. I instructed Capt. Vercoe to have the office on the mine put in repair, with a view to his keeping his books there, and, if necessary, to have a man to sleep on the mine to protect the property. I have also made arrangements for the alteration to the powder magazine.

BOOKS.—The books belonging to the mine are fairly kept, excepting the stock-book. This will in future be used and balanced up every month.

CAPABILITIES OF MINE.—The capabilities of the mine at the present time will justify preparing for sale about 20 tons of lead ore per month. This quantity may be increased to 40 tons per month so soon as sufficient miners are obtained. This refers to the workable ground already opened, but if arrangements are made to extend the workings already proved, beyond a reasonable doubt I believe the income from the mine may be increased three or fourfold.

ALTERATIONS AND EXTENSIONS.—I would advise that the necessary steps be taken to sink another shaft on the east and west lode, situated about 180 fms. from the present shaft. It has already been opened upon in numerous places at surface, extending for nearly a mile, and lumps of lead are found in the heaps lying about. The place proposed to sink the shaft it has been sunk upon to the depth of 7 fms. By sinking 8 fms. more we shall reach the level of the 15 fm. level of our present shaft, which has been driven about 140 fms., or within 40 fms. of the proposed shaft. There is no doubt lead will be reached, as soon as the water is out, in sufficient quantity to pay the expenses. The 4 in. pumps that were formerly in use will be suitable for the new shaft, and the wire-rope, stands, and pulleys that we have by us can be removed and fixed and attached to the engine for a small outlay. The raising can be done with a whim, or, if necessary, might be done by the engine with suitable connections were provided. This would at once open up new ground that we have every reason to believe will be extremely profitable. I would further recommend that a steam stone-breaker be purchased, in order that all the orestuff raised from the mine should be broken as soon as it reaches the surface, so that the useless portion may be thrown away, and only the good stuff carted to the crushing mill, which is nearly half a mile from the shaft. If these suggestions are carried out it will be necessary, owing to the uncertain supply of water for the water-wheel for crushing mill, to lay down a small modern crushing and dressing machine, which can be driven by the present engine, and would render us to a great extent independent of the water-wheel.

FUNDS.—To enable us to carry out these alterations and extensions it will be necessary to increase our present called-up capital. I would, therefore, suggest that the remainder of the unallotted shares should be in the first place offered *pro rata* to the present shareholders at par, but in the event of their not being applied for they should be offered to the public at such premium or on such terms as the directors may think best for the interest of the company.

That was the report which he had to present, and he should now be happy to hear any discussion upon it.

Mr. ADAMS asked whether, supposing the shares were placed, the directors would be able to carry out the mine so as to pay its own expenses, until a dividend was declared?——The CHAIRMAN said he was sure of it, and that, too, without calling up the 5*s.* per share. It was the unanimous wish of the directors not to call up the 5*s.* If the shares were placed he believed they would have sufficient capital to properly lay down the working of the new shaft.

Mr. ADAMS: And when you have done these things you will be able to get 40 tons of lead per month?——The CHAIRMAN: Yes, after that.

Mr. ADAMS: How much is that worth?——A SHAREHOLDER: About 640*l.*

The CHAIRMAN: There is no limit to the 40 tons; if we place the shares we shall not only put the other part of the mine in a good position, but also pay divideuds.

Mr. ADAMS asked how long 3000*l.* would last to go on with the working, supposing they did not get any returns?——The CHAIRMAN: There is 150*l.* per month expenses; the whole outlay for dressing machinery will not exceed 1000*l.*, therefore the other 2000*l.* would last about nine months, but during the time we should sell from 20 or 40 tons per month.

Mr. ADAMS asked whether the engine had been adapted to the consumption of peat.——The CHAIRMAN said the engine could consume peat, but the wet weather had prevented the peat being used. Up to the present time the board had been paying 9*s.* per ton for coals, but he had recommended them to send out a rather better quality.

Mr. DUNCAN: How much coal do you use?——The CHAIRMAN: About 2 tons in 24 hours. He added that they had 1000 tons of peat cut, but the wet weather had prevented its being taken to the mine.

Mr. J. H. GREEN (a director) said that the board were greatly indebted to the Chairman for his labours, and also for the very able report which he had presented, and he begged on his own behalf, and on behalf of his colleagues, to endorse every recommendation which the Chairman had suggested. No doubt the mine might be worked from a hand to mouth way, but it would be a great mistake to do this, but if the suggestion of the Chairman was adopted the mine would be opened up most thoroughly: and if that were done, judging from the amount of ore in sight, the 20 tons per month would probably be 30 or 40 tons; but even taking it at 20 tons per month that would give over 2000*l.* of clear net profit, which would give a very handsome return upon a capital of 9000*l.* He referred to the importance of having proper cottages for the accommodation of workmen, and said that these cottages could be made to pay 10 per cent. on the outlay.

Mr. ADAMS said that, having heard the statement of the Chairman, he had pleasure in moving—"That the ordinary shares now remaining unallotted be offered to the shareholders *pro rata* according to their respective holdings in the company, and that any such shares as may not within the time prescribed for the purpose be accepted and paid on into the company's bankers, may be disposed of by the directors in such manner as they may think proper for the benefit of the company."

Mr. HENRY DUNCAN seconded the motion, and expressed his great satisfaction at the prospects of the mine. He believed at the beginning that they had a good property, and now they saw they had the stuff, and he for one would have no hesitation in increasing his investment for the purpose of fully developing the resources of the mine. He expressed a hope that the directors would push on the development of the property as rapidly as possible.

The resolution was then put to the meeting and carried.

On the motion of Mr. WHITE, seconded by Mr. DUNCAN, a vote of thanks was passed to the Chairman and directors, and the meeting broke up.

CARMARTHENSHIRE ANTHRACITE COAL AND IRON CO.

An ordinary general meeting of shareholders was held, on Saturday, at the City Terminus Hotel, Cannon-street,

Mr. JASPER WILSON JOHNS in the chair.

The notice calling the meeting was read by Mr. GEORGE J. M. AITKEN (secretary). The report of the directors was taken as read.

The CHAIRMAN opened the proceedings by reading the auditors' report, which referred to a certain valuation of the stocks on hand at the date to which the accounts were made up, and observed that that identical stock had been sold at more than 15*s.* a ton, which fact he considered would be satisfactory to the shareholders, as showing that it had been taken at only its fair price. He (the Chairman) then went on to say that he did not know that he could make matters much clearer than the report and balance-sheet had already done. From the small attendance on the present occasion they might, he thought, fairly assume the shareholders were perfectly satisfied with the state of affairs. (Hear.) He would, therefore, without further comment, at once proceed to move that the report and accounts be received and adopted. That motion having been seconded, he should be happy to answer any remarks any gentleman might be pleased to make thereon.——Mr. J. BIRD seconded the resolution.

The CHAIRMAN, before putting the motion, observed that the existing condition of the labour market was a very serious question with the company at the present moment: the colliers were practically their masters at the present time. They hoped, however, that the measures the masters were taking to protect themselves would sooner or later bring the men to their senses. He was happy to inform the shareholders that all their transactions at the present moment were of a very profitable character, and they had little doubt that at their next meeting the board would be in a position to submit a statement of affairs satisfactory to the proprietors in every way. (Hear, hear.)

The resolution for the adoption of the report and accounts was then put and carried unanimously.

The CHAIRMAN next moved, Mr. BRIGHT seconded, and it was unanimously resolved, that a dividend at the rate of 10 per cent. per annum be, and the same is hereby, declared.

A resolution was then passed re-appointing Messrs. Deloitte, Dever, Hollebone, and Co., as auditors to the company, at a remuneration of 50 guineas per annum.

Mr. B. JONES moved a vote of thanks to the Chairman, which, on being seconded by Mr. BRIGHT, was put and carried unanimously.

The CHAIRMAN, having acknowledged the compliment, remarked that he had recently returned from the works, where, he was happy to say, they were making very great progress with their new pit and engines, and he had little doubt by the end of October, or Christmas at latest, that they would be in a position to put out a very large amount of coal from their new pit, which he himself seen was of a very superior quality. Indeed, all the dealers were now particularly desirous of getting hold of it, and he had no doubt that it would command a high price in the market. (Hear.) There were reasonable grounds for anticipating the board would be in a position to recommend the payment of a larger dividend at the next meeting.

The proceedings then terminated. ——

CALDBECK FELLS MINING COMPANY.

The half-yearly meeting of shareholders was held, on August 28, at the offices of the company, Carlisle. Colonel SALKELD, Chairman of the company, presided, and there were also present Mr. Noble, Villa Marina, Douglas; Mr. Page; Mr. R. B. Brockbank; Mr. S. G. Saul (solicitor of the company); Mr. James Irving; Dr. Arras, of Warwick Bridge; Dr. Tiffen; Mr. Crosthwaite, of Workington; Mr. J. Robinson; Mr. E. Calvert; Mr. J. Penrice; and Mr. W. Gath (secretary). The report, which was published in last week's Journal, was taken as read.

The CHAIRMAN said he had very little to say beyond what was stated in the report. He was sorry he could not congratulate them on successful working during the past half-year. They had met with difficulties which they did not expect. In the first place, the preference stock which it was decided to issue at the last meeting had been taken up only to a small extent, and, in consequence, they were obliged to discontinue sinking the shaft, on which the hopes of the company were mainly concentrated. All the engineers who had inspected the mine considered that the chief hope of success lay in getting to greater depth than they were at present. He was sorry so many shareholders had not taken up their preference stock. There was a difference of opinion at the last meeting as to the amount of that stock which should be raised. Some believed that 10,000*l.* was the proper sum, but others thought that was more than was necessary, and, consequently, the sum was limited to 5000*l.* Since then several shareholders who had not taken up their quota of the stock had explained themselves in this manner:—They said they believed that 5000*l.* would not be sufficient to accomplish the work of sinking the shaft, and that if the amount was limited to that a pre-preference stock, taking precedence of the preference stock now issued, must be created, therefore they would rather not subscribe at all as things stand. Whether it would be well to call a new meeting, and get power to issue 10,000*l.* instead of 5000*l.*, was for the meeting to determine. The argument he had mentioned would weigh with many, especially as it would be quite unnecessary to call up all the 10,000*l.* in case it was not wanted. There would then be no risk of a preference stock hanging over their heads. He was sorry there had been a loss on the working of the mine. They had been obliged to confine the working to the western part, where the turbine which they used for pumping the water had gone almost to pieces from wear and tear, and they had had to erect a water-wheel instead. The wheel answered all the purposes intended more fully, and he believed it would be a permanent piece of machinery. Owing to the influx of water and the failure of the turbine they had not been able to get any of the rich ores this half-year, so that they had to depend on the poorer sorts: hence the loss. He moved the adoption of the report, which Mr. NOBLE seconded.

The SECRETARY (Mr. W. Gath) read the last report of the managers, dated Aug. 25. They make various recommendations, including the resumption of the sinking of the junction shaft below the 20 fm. level. They had in the new water wheel and its appliances motive power to enable them to do so, and depth in Caldbeck Fells is now all important. There would have been no deficiency this half-year had they had access to the reserves of ore at this shaft.——Dr. TIFFEN enquired as to the object of the recommendation that another cross-cut be made in the deep adit west, from the north lode south to the great south lode. They had already driven a cross-cut from the north lode to the south lode at a certain point, and had driven into it 18 feet. What was the object of having another at some little distance in advance?——Mr. BROCKBANK: It will be 40 fathoms west. The two lodes are in fact coming together.——Mr. NOBLE said that with the signs which were manifest the cross cutting should be started at once, and it would be a wonder indeed if it failed in the results they expected. There were the best symptoms that they were on the road to ore, and he believed the trial would be very satisfactory. ——Dr. TIFFEN agreed that, under the circumstances, the cross-cut ought to be proceeded with.——In reply to questions, Capt. HAWKE said the result of two lodes coming together was generally a bunch of ore, and in this mine on a former occasion the intersection of two lodes resulted in a bunch of ore worth 50*l.* per fathom.

Mr. BROCKBANK said they confidently anticipated a similar result if these two lodes came together, as seemed probable.——Dr. TIFFEN then urged that the accounts should be made out each half-year precisely as in the previous half-year, so that a comparison might be made.——The SECRETARY promised that in future it should be so.——Dr. TIFFEN remarked upon the large item of 91*l.* for travelling expenses, which was far more than had ever been charged before; and the cost of dressing was at least 50 per cent. higher than previously, which could scarcely be accounted for by the increased cost of labour, especially as the company had been at great expense in providing additional machinery for the purpose.

The CHAIRMAN said the directors had to day met for the first time since the accounts were published, and they had directed their special attention to those two items which were under investigation when the time for the meeting arrived. He promised that the circumstances should be fully enquired into. The report and accounts were then unanimously adopted.

The CHAIRMAN then introduced the question of raising the interest offered upon the new preference capital from 8 to 12 per cent., and submitted a resolution prepared by the directors with that object. He repeated what he had said regarding the objections to 5000*l.* on the score of its inadequacy, and said there could be no harm in raising it to 10,000*l.*, because the latter need not all be called up unless it was wanted. It was quite clear, if they were to go deeper than they were at present, they must have more money, and for his own part he was sure that some who would subscribe to 10,000*l.* would not subscribe to 5000*l.*, as they expected an issue of pre-preference stock afterwards.

Mr. CROSTHWAITE said at the last meeting he expressed an opinion that 5000*l.* would not do, and that after spending it they would soon be as they were again. Nor did he think 12 per cent. was sufficient remuneration to induce people to lend their money to rescue the mine from its present position.

Mr. NOBLE said that a great part of the 5000*l.* was required for payment of debts owing by the company up to the end of December last, and he agreed that the balance was too small to execute the work required. He also mentioned that the travelling expenses referred to by Dr. Tiffen were not directors' expenses, but those of the agent at the mine, and the directors considered the charge very unsatisfactory. In previous accounts these expenses had been charged under a different head. He also stated that they had got in a bill of 20*l.* for stationery supplied to the late secretary for the previous year.

The CHAIRMAN said water had got into the shaft, and the resumption of work would now be more costly than if it had not been stopped.

Mr. NOBLE: Capt. Hawke has not been able to get to the richer part of the mine on account of the water being in the level.

Mr. PAGE suggested that, instead of paying a preferential dividend, they should make it a guaranteed dividend, so that the holders of the stock would have a claim on the assets in the event of the concern being wound up.——Dr. TIFFEN: That would be a kind of mortgage.

Mr. PAGE: But it is a perfectly fair thing that those who subscribe under present circumstances should have a prior claim.——Mr. BROCKBANK: In that case, whenever the mine comes to pay a dividend, the arrears on the guaranteed stock would have to be paid before any other was paid.——Mr. PAGE: Yes, if you do not get your dividend this half-year you will get it next, or whenever there is a balance to the good.——Mr. SAUL said the debenture-holders could sue the company at the end of each half year for the amount of the interest.——Mr. PAGE: That could be provided against.——Mr. IRVING: The directors should take power to redeem the guaranteed stock on the mine recovering.——Mr. NOBLE: Yes, that is important; it would never do to have the stock a perpetual charge on the concern.

After some discussion the following resolution, drawn by Mr. PAGE, was unanimously agreed to, the directors being left to settle the details:—"That this meeting recommend the directors to issue debenture stock not exceeding 10,000*l.*, at a rate of interest not exceeding 10 per cent. per annum, and that the sum of 2567*l.* in preference shares already subscribed form a portion of the said sum of 10,000*l.*; and they further recommend that the company reserve power to redeem such stock on three months' notice, at a premium of 10 per cent."—This concluded the business.

Mr. PAGE moved, and Mr. IRVING seconded, a vote of thanks to the Chairman and directors.

Col. SALKELD thanked them, remarking that the position was one which had been pressed upon him by the shareholders, and if he could do anything to further their interests his efforts should not be wanting.

CWM RICKET AND MAESNANT LEAD MINING COMPANY.

The annual ordinary general meeting of shareholders was held at St. James's Chambers, South King-street, Manchester, on Aug. 28,

Mr. JOSHUA MOSS, Chairman of the board of directors, presided.

The SECRETARY read the notice convening the meeting. The minutes of the previous annual general meeting having been read and confirmed, the CHAIRMAN said he was satisfied they had a large and valuable mining property. They had not attempted, as is commonly the case, to pick out a little ore here and there near the surface. They had some 6 or 7 tons of lead ore prepared for market, and more ready for dressing; but they did not care to sample until they could feel assured of being able to effect regular monthly sales. During the past year they had confined operations to a few points which they deemed to be of good importance. In a short time certain junctions would be reached at a considerable depth from surface, where they have every reason to expect considerable deposits of ore. He had great confidence in the property, especially since the union of Maesnant with Cwm Ricket. More money must be spent to develope the mine in depth; but, that having been done, he had no doubt their most sanguine expectations would be realised.

The directors' and agent's reports and the statement of accounts were then received and adopted.

It appeared from the reports that many of the lodes in Cwm Ricket ran into the sett called Maesnant. That the directors of Cwm Ricket had purchased from the proprietors of Maesnant, with the whole of their rights, title, and interest, together with the plant, machinery, &c., in accordance with sundry resolutions passed at an extraordinary general meeting of shareholders, and confirmed at a subsequent extraordinary general meeting, duly convened and held for that purpose. It further appeared that the new issue of shares had been taken up by the shareholders, whereby a large amount of additional available capital had been raised. The name of the company had been changed from Cwm Ricket to "The Cwm Ricket and Maesnant Lead Mining Company (Limited)."

The agent's report showed that about twenty well-defined lodes had been ascertained to exist in the united setts; that in driving the deep adit a splendid masterly lode, more than 12 ft. wide, had been discovered, mineralised throughout. A 24 fm. level was being driven to intersect this and two other promising lodes. At 40 fms. from surface a level had been driven over 40 fms. on a powerful caunter lode towards the Maesnant central lode. At the junction of these lodes great things were expected. Only a part (the footwall) of the caunter lode was being carried—its width had not been ascertained, all pressure being put on to reach the great central lode.

The agent (Capt. Thomas Grenfell) was present at the meeting, and satisfactorily answered questions put through the chair. He verily believed the mine would be equal, if not superior, to any in the Principality. He was certain the Van lode runs more than a mile through the sett, having carefully dialled every inch of the way from the Van to the mine. Two men were then engaged boring the lode. The Great Flora caunter lode runs through the entire sett, and intersects several important and powerful lodes.

Messrs. William Aldred and John Maguire were re-elected directors of the company, and Mr. Thomas Aldred was re-appointed auditor.

It was resolved the next ordinary general meeting shall be held in August next.

A hearty vote of thanks to the Chairman concluded the business of the meeting.

WHEAL KITTY (ST. AGNES) MINING COMPANY.

A quarterly meeting of adventurers was held, on Thursday, at the mine, Capt. TEAGUE, the manager, presiding.

The accounts showed a profit on the three months' working of about 1700*l.*, the costs having been 2973*l.* and the returns 4674*l.* The agents' report showed that the prospects were much the same as for some time past.

The CHAIRMAN said the profit on the quarter, added to what they already had in hand, left a balance in favour of the mine amounting to 2028*l.* 13*s.* 5*d.* This would not enable them to do so much as they did at the last meeting, but he would propose that they should declare a dividend of 7*s.* 6*d.* per share, and forego the bonus of 2*s.* 6*d.* They would then carry forward a credit balance of 418*l.*

Mr. MICHELL seconded the resolution, which was carried unanimously, and the report and accounts were also passed.

It was mentioned that the balance of 418*l.* was almost sufficient to cover the extra month's costs. This, however, will not become due for another six months.

Mr. COCK asked what had been the amount of the extra costs consequent upon the increased price of coals and other materials?——Capt. TEAGUE replied that he believed coals alone had gone up 75 per cent.

Mr. COCK said he asked the question because he thought it was surprising that they were able to declare so good a dividend, seeing the amount of extra costs which they had to meet.

Mr. HITCHINS said the dividends were most gratifying, and

The CHAIRMAN added that the present accounts included 200*l.* in respect of the boiler. He, therefore, thought they were in a very satisfactory position. The merchants' bills were all paid up to last March, and only those remained due that were charged in the present account.

This concluded the business of the meeting, and in the afternoon the adventurers dined together, under the presidency of Capt. Teague. After the usual loyal toasts, and "Success to Wheal Kitty," had been given from the chair,

Mr. ANDREW HINGSTON, of Liskeard, proposed "The Health of Capt. Teague." He said it was of vast importance to the success of a mine that it should be in the hands of an able and energetic man, ably sustained by agents who fully carried out the wishes of the manager, in order that the mine might be made a profitable one, and brought to an issue satisfactory to the adventurers. In Wheal Kitty he believed they had all these. He had recently been struck with certain observations which he had read in print, to the effect that some ten or twelve years ago there were 50,000*l.* worth of reserves left in the mine. Whether or not that statement was founded on fact he was unable to say; but, seeing that they were now raising tin of the annual value of about 20,000*l.*, it seemed to him that if there was any truth in such an assertion the mine must have come to a standstill in about 2½ years, as at the end of that time the whole of the supposed reserves would have been entirely absorbed. (Hear, hear.) But the mine was still going on, and he could not refrain from expressing his gratification at finding that so good a dividend had that day been declared. It had certainly exceeded his anticipations; for, looking at the fact that within the last twelve months the price of tin had gone down 20*l.* per ton, and the labour, coals, and iron had been so increased in value, it was a matter of congratulation that they had only gone back 25 per cent. For himself, he did not expect that the dividend would have been more than 5*s.*, and the adventurers were indebted to Capt. Teague for the skill, energy, and economy with which the mine was worked. (Applause.)

Capt. TEAGUE, in responding to the toast, said he was certainly somewhat startled when he saw in the papers the remarks to which Mr. Hingston had just referred, and he had no doubt that the adventurers in Wheal Kitty must also have been surprised on reading the statement, and have been led to make anxious enquiries as to the truth of it. He was, therefore, very glad indeed to have this opportunity of giving an explanation of the matter, and of endeavouring, if possible, to set the minds of the adventurers at rest with regard to it. (Hear, hear.) In the first place, he must contradict the assertion that the manager who had charge of the mine before he came into it had driven 375 fms. of cross-cuts, the fact being that the distance driven exceeded very little more than 100 fathoms. He (Capt. Teague) felt the matter to be of such importance that he had the ground measured in order to arrive at the true state of the case, and he said, without hesitation, that the statement as to there having been 50,000*l.* worth of reserves was simple nonsense. (Hear, hear.) Since he had been connected with the mine they had paid in dividends alone about 30,000*l.*; then again, the lords' dues had amounted to many thousands, and consequently the 50,000*l.* must now be well nigh absorbed. During the time of the late manager the lode was never cut below the 50 fm. level,

but now they were down to the 142, so that since his (Capt. Teague's) management they had really sunk under the 50 fathom level something like 90 fathoms. He, therefore, thought it must be clear to the adventurers that the assertion respecting the 50,000*l.* reserves was next to nonsense. He could not help saying that in times like the present, when public men stood up to make what were called speeches, they should be as careful as possible in stating only that for which they had some foundation, and they should guard themselves against making assertions which they would be unable to verify if afterwards called upon to do so. (Hear, hear.) They could not shut their eyes to the fact that the outside public did not entertain the greatest confidence towards gentlemen who were connected with mining concerns, and it behoved them all to be cautious not to say without some justification things that would have the effect of increasing this feeling. Seeing what had been accomplished in Wheal Kitty during the last ten years—and he ventured to say that it had, at any rate, been conducted with respectability—he was at a loss to know how any man in his right senses could stand up and say publicly that nothing whatever had been done except what had resulted from his own discovery. (Hear.) As he had already said, they had sunk 90 fathoms under the deepest level that the late manager ever saw, and they had for many years made but little returns either from that level or above it. He was pleased to say that, with a better price for tin, a reasonable reduction in the price of materials, and a little more contentment on the part of the men, Wheal Kitty would go on successfully for many years to come. He did not mean to say that they were always going to pay the same large dividends that they had hitherto done, but they would at any rate pay something; and, looking at present indications in the tin market, he was led to believe that they would yet see an improvement in the price of tin. Whenever it came they would be entitled to it. (Hear.) At the present moment there were very few mines in Cornwall working at a profit, and unless there was an improvement in tin the number would still further decrease. In concluding his remarks, Capt. Teague mentioned that within the last fortnight he had been in communication with the lords of the mine, and he was glad to say that every necessary arrangement for the granting of a new lease, to date from Christmas next, had been made. The dues were not exactly as he could have wished, but on the whole he thought they had reason to congratulate themselves upon the terms that had been agreed on. With regard to the piece of ground which had led to the delay in the granting of the lease, he thought he might say that the present arrangements as to the limits would not be interfered with.

"The Health of the Committee" was next proposed, and acknowledged by Mr. Hickey and Mr. W. Pike. Capt. Davey and Capt. Williams responded for "The Agents," and both bore testimony to the thoroughness and reliability of Capt. Teague's management of the mine. Mr. Dingley, of Sherborne, returned thanks for "The Visitors," and this exhausted the toast-list.

HAFODAU MINING COMPANY.

A meeting of shareholders was held at the Lion Hotel, Aberystwith, on Monday,—Mr. W. JONES, Brynowen, in the chair.

Capt. JOHN PAULL, the manager and secretary, having read the notice convening the meeting,

The CHAIRMAN read the report of the manager, as follows:—

In handing you my report for the meeting to-day, I may here state that only 11 fms. 2 ft. have been driven on the course of the lode since the last meeting, on June 3 in last year. During this drivage the lode has varied in size from 1 to 3 ft. wide, containing spar, clay-slate, and carbonate of lime, and at times some very nice spots of lead ore therein. In the present end the lode is now divided into two branches, being about 1 ft. 6 in. wide; in one of those branches there is a little lead ore, and I expect, according to present appearances, these branches will come together in a few feet further east, and there is a well-defined wall, better than I have seen before. I should strongly recommend the pushing on of this point more vigorously, and also to say that there are other lodes north of this point which can be reached by the same cross-cut, or from the present end if thought proper, which I think ought to be done, seeing the very likely piece of virgin ground at surface, and the Cefn Brwyno, Powell United, and Llywernog lodes passing through the same, the above three mines being very productive. I beg here to say that my opinion of the property is still as favourable as ever, and I believe if properly developed will be a good, lasting, and paying concern. I shall attend the meeting to-day, and shall be happy to answer any questions that may be put to me respecting the past or future development of the mine.—JOHN PAULL.

The SECRETARY said he saw some of the largest shareholders in London a short time ago, who were very anxious to see the concern carried on with more energy, but as there were two of them now present he should say no more on that subject.

The CHAIRMAN called on Mr. D. Morgans, of London, to explain the views of his co-adventurers in London.

Mr. MORGANS said: Mr. James is here himself, and represents Mr. Bennetts, of Tottenham Court-road, and I am in the same position with regard to Mr. and Mrs. Lewis, of King-land. We have talked the matter over together several times, and our opinion is that more men should be put on and prove the property, and let us see what we have. Everyone who knows it say it is a very likely place, and as we have the lodes mentioned in the report going through, let us prove their value on the principle of a "nimble ninepence being better than a slow shilling." (Hear, hear.) We are prepared with our money; make calls, and have money in hand to do the work.

The MANAGER said he should feel obliged if the present meeting would appoint a secretary to attend to the calls and the money affairs altogether.

Mr. G. WILLIAMS (G. Williams and Co., Aberystwith) said: I perfectly understand Capt. Paull's suggestion, which is quite right. He wishes to have someone to take off the money matters from his hands. For my own part I am quite satisfied as it is, believing that everything is being done that can be done for the benefit of the shareholders.

After some further conversation it was unanimously agreed that the business should be carried on as before.

Mr. W. JONES (Llwyngrosse): I am rather in an awkward position in the company, being landlord, to say much about it, but firmly believe that if we push on eastward a little further we shall find something good. Another 12 months, in all probability, will lead to good results. The sett has always been thought well of by all local parties, and a great many applications were formerly made to me for it. I am a large shareholder in it myself, and am anxious to see it proved.

The CHAIRMAN: We find by the balance-sheet to-day that there is a small balance against the company, only a few having paid since the last call was made, owing to this meeting being held to-day.

Mr. JAMES (London) proposed, Mr. JONES (Glanmorfa) seconded and carried unanimously, "That all calls are to be paid within a month from the above date in order to carry on the concern more vigorously."

It was agreed that more men should be put on in order to develope the property as quickly as possible. The report and accounts were then unanimously adopted.

A cordial vote of thanks to the Chairman terminated the proceedings.

EAST LLANGYNOG LEAD MINING COMPANY.

The half-yearly general meeting of shareholders was held at the Wynnstay Arms Hotel, Llanrhaiadr, near Oswestry,

Mr. JOSHUA MOSS in the chair.

Previously to the meeting a number of the principal shareholders went to the mine, and, under the guidance of Capt. Pascoe, inspected the different levels, and expressed themselves as highly gratified at what they saw.

The CHAIRMAN: You are aware that this is in reality only a formal meeting. The shareholders at the last annual meeting expressed a wish that a semi-annual meeting should be held, and it was also arranged that it should be convened in the course of the present month. That meeting also, I believe, came to the resolution that a special inspection of the mine should be made by Captains Williams and Paull. Both these gentlemen were, however, unable to leave their duties for this purpose. The directors with some difficulty secured the services of Capts. Rowe and Jeffrey, gentlemen of great experience and of undoubted authority on mining matters. I imagine that all our shareholders are well aware of the standing of these gentlemen. Both Capts. Rowe and Jeffrey have made a report, which was, I believe I may say, what all of us who are connected with the management expected their report would be. We, as directors, thought we knew pretty well the condition of the mine, and also its working, and the best mode of proceeding with the operations, and I hope that the shareholders generally, on receipt of that report, would feel satisfied that the mine had been conducted in a suitable manner, considering its character from the time it had been under the present management. We had our hopes raised some time ago by the discovery of a large rib of solid lead, which we hoped would continue. However, that left us, and we have had to go on making the best of our circumstances, and making all the progress we could, and although we have not been so fortunate as to find this large rib of solid lead continuous, we still have great confidence that the mine will turn out a very profitable one. The strata are of so changeable a character that we cannot with confidence predict or anticipate what we may meet with, but we have indications of a favourable and encouraging character at a sufficient number of points in the mine to encourage us to believe that it will turn out as we have all along believed that it would do—a very valuable property. I am told by those who know more about the matter than I do that very few mines have proved productive to the extent which this has in anything like the same space of time. Since the annual general meeting of shareholders we have sold lead to the value of 3,657*l.* 9*s.* In March, 754*l.* 0*s.* 10*d.*; in April, 732*l.* 0*s.* 8*d.*; May, 131*l.*, and also 466*l.* 10*s.*; June, 386*l.* 5*s.*; July, 510*l.* 2*s.* 6*d.*; and in August, 282*l.* 10*s.* We think that in these sales alone there is sufficient to encourage us.

Mr. T. TAYLOR read the directors' and agent's report.

The CHAIRMAN: Mr. Pascoe is here, if any of the shareholders would like to ask him any questions about the mine, or get any further information.

Mr. MEGGINS (to Capt. Pascoe): I suppose you have still great faith in the mine, and the ultimate success of it?—Capt. PASCOE: Most decidedly. The mine is subject to changes, as you will gathered from my report, but it has undoubtedly improved. I have been expecting to return much larger quantities of ore than I have yet done, but have been disappointed.—Mr. MEGGINS: But you expect to find the ground ground more settled as you go down?—Captain PASCOE: Yes. Even now the farther we go down the better we find. We have a good course of ore in the bottom of No. 4 level, and also in the roof. Then we have also a very good run of ore gone down below the No. 3, and we must either cross-cut or drive on the clay slate; it is very strong at the bottom of the level.—A SHAREHOLDER: Is it not your custom to follow the lode that you have struck downwards?—Capt. PASCOE: We cannot do that. We drive on a course of ore (say) for 20 or 30 fms., if it lasts for that length, but then we have another level underneath, perhaps 10 fathoms below, and in course of time we communicate those levels, and then stope away the ore. We take the ore that has gone down from the level below.

Mr. J. TAYLOR here explained that by driving a level underneath, and rising from that to the upper level, the ore could be got much cheaper than by sinking for it.—Mr. T. GREAVES: Supposing the lode you find dipping downwards only extends a yard or two, and then ceases altogether, would it not be less cost to do that than drive a lower level?—Mr. TAYLOR: Experience has taught us that the lode does go down. In every level from one to four we have the same course of ore, and it is all but a certainty that the ore will maintain itself, though there is a possibility that a cross course might come in and interfere with it. The whole of the mine can be intersected by adit levels, and as we have to drive one level after another in order to ventilate and follow the lodes, we find it is far more inexpensive to wait until the level is driven in. We must put up a rise for ventilation, whether we have ore or not, or otherwise the men could not work. So far as human foresight can determine, it is the opinion of all who are in a position to give one, that the mine looks better than it has done for some time past.

Capt. PASCOE: I never saw the deep adit looking anything like what it does now. I am only surprised lead has not been found there yet. So far as one can possibly predict, the indications certainly are that the lead is going down and becoming more consolidated. You yourselves saw it when you were underground to-day.—Mr. GREAVES: Do I understand that you have hit upon the same lode of lead in the higher levels that we saw in the No. 4 levels?—Capt. PASCOE: Yes, in the Nos. 3, 2, and 1.—Mr. GREAVES: Have you been on the same lode of lead in the higher level?—Capt. PASCOE: Yes.—Mr. J. TAYLOR: I have very great faith in cross-cuts. When we took this mine there was not one. I always advocate them in the working of any mine, because I have seen the utility of them in many instances. I have also seen the folly of driving long levels without putting in cross-cuts, because however skilful a miner may be, if he does not put in cross-cuts he cannot possibly tell what may be by his side. This mine had been worked for years before we took it, and the former agent must have touched a rib of lead in the No. 1 level with his elbow every time he went into the mine. It was, in fact, within a few inches of him. I urged him to put in a cross-cut; ultimately this was done, and in a fortnight he cut through a lode 12 ft. wide, and that was the commencement of our success.

The CHAIRMAN then proposed that the directors' report and agent's report be received and adopted; and the proposition being seconded by Mr. NASMITH, it was carried unanimously.

Mr. J. TAYLOR: I presume we have no further business to transact, as this is merely a formal meeting. I suppose that it will be necessary for us to send a report of this meeting to each of the shareholders. I do not know whether they expressed a wish to that effect at the last meeting or not, but I think we had better do so.—Ultimately it was left to the directors to decide, though it seems to be the wish of the shareholders present that a report should be sent.

Mr. TAYLOR: I have very great pleasure in proposing that the best thanks of the meeting be presented to Mr. Moss for the very efficient manner in which he has conducted the business of the meeting.—Mr. DENTON: I have great pleasure in seconding that. A more efficient Chairman I do not think we could possibly have.

The motion was carried unanimously.

The CHAIRMAN: I am very much obliged to you for this kind expression of your confidence. My interest in this mine is considerable—that is, the interest which I feel in its success: but it is not an unselfish one, because I happen to have a large pecuniary interest in it; but from the first I have had every confidence that it will, sooner or later, answer our ends.

PANT-Y-MWYN LEAD MINING COMPANY.

The first annual meeting of shareholders was held at the offices, Commerce-court, Lord-street, Liverpool, on Aug. 29,

Mr. JAMES YELLAND in the chair.

Mr. E. ROBERTS (the secretary) read the notice convening the meeting.

The reports of the directors and captains, and statement of accounts, were submitted.

The CHAIRMAN, in moving that the reports and accounts be received and adopted, referred to the very excellent reports (made since the accounts were issued to the shareholders) from the following eminent miners:—Mr. W. T. Harris, of the Bog and Pennerley Mines: Mr. Enoch Parry, of Central Snailbeach: and Mr. James Nancarrow; and also one from Mr. Henry Williams, mineralogist and smelter, of Llanerchymor, near Holywell, all of whom are very intimately acquainted with and have had great experience in the district; and from their reports the directors are in good hopes of very shortly being able to make regular sales of ore.

Messrs. Dawson and Wright having been re-elected directors, and Mr. G. E. Holt re-elected auditor for the ensuing year, a vote of thanks was accorded to the secretary and captains for their services.

The usual courtesies to the Chairman concluded the business.

WEST ESGAIR LLE MINING COMPANY.

A general meeting of shareholders was held at the mine on Aug. 28. The directors' report, and also the agent's report, were published in last week's Journal.

The directors and shareholders, on their arrival at the mine, from Aberystwith, were received by Capt. Harvey, who conducted them over the surface works, when some of the newly erected machinery was in full operation. The greater part of the new machinery is already put up, and the whole will be finished in a few weeks. After the directors and shareholders had inspected the surface works they were taken underground by Capt. Harvey, and saw, with their own eyes, the immense bodies of ore laid open in the mine, and seemed to derive immense gratification from their underground visit. The company then adjourned to the account-house, where the meeting was held—Capt. G. J. HAMILTON in the chair.

The directors' report and accounts, and the agent's report (which appeared in last week's Journal) were taken as read.

The CHAIRMAN, in opening the business of the meeting, stated his belief that in the West Esgair Lle Mine the shareholders had a very valuable property. All the necessary machinery had been furnished, and they had already commenced sending stuff to the surface. There was hundreds, if not thousands, of tons of lead ore lying in the different pitches, broken from the lode, and ready to be drawn to surface. From his own observations, when he was in the mine that day, he was enabled to say there was an enormous amount of lead ore in the mine, and he had not the slightest doubt, as the mine was opened out, they would have a property that would amply repay them for their outlay and their patience. The mine had been reported on by first class mining experts, and they all agreed that it was a very rich property. In conclusion, he had only to move "That the directors' report, together with the statement of accounts, as circulated amongst the shareholders, be received and adopted."

Mr. J. J. LYNCH (director) seconded the motion.

Mr. SNELL drew attention to the balance-sheet, and asked if all the liabilities were included?—Mr. W. J. LAVINGTON said everything, down to the date of the balance-sheet.

Mr. SNELL: So the balance at the bankers is about 124*l.*?—Mr. W. J. LAVINGTON: It is nearer 160*l.*, as over 300*l.* of the amount owing on call account has been paid since.

Mr. GEORGE LAVINGTON: It is estimated in the directors' report (which was taken as read, and the Chairman did not refer to the matter) that there are 1000 shares which we propose to issue at 1*l.* premium, which will give us 2000*l.* They will be offered in the first place to the shareholders, but if they do not wish to take them up the directors know other parties who will come forward and take the whole. The shareholders will, however, have the preference.

Mr. SNELL: The total amount of assets is, therefore, about 4500*l.*, without taking into account the ore we have in reserve. Can Capt. Harvey give us an estimate of the quantity of ore he has ready to bring to surface?—Capt. HARVEY: I do not think I can give you any idea. We have such an enormous amount that I cannot say positively what it is capable of producing.

Mr. G. LAVINGTON: How does the lode look in the bottom of the shaft?—Capt. HARVEY: Better than we have ever seen it before. In fact, we have not had anything like it. It is worth about 4 tons of lead per fathom.

Mr. G. LAVINGTON: I presume that the quantity of ore ground laid open is nearly inexhaustible. What is the extent of the ore ground?—Capt. HARVEY: The eastern end is driven 35 fms., and the lode averages 2 tons of ore per cubic fathom. The stope is about 40 ft. wide, and the winze, when it is connected to the 20 fathom level, will lay open ground 37 fms. deep and 25 fms. long below the 10.

Mr. W. J. LAVINGTON: Then we have about 4500 fms. of ore ground laid open, averaging 2 tons of lead ore per cubic fathom.—Capt. HARVEY: Yes; it is quite possible it may produce more than 2 tons to the fathom.

After some further interesting discussion the motion for the adoption of the report and accounts was put and carried unanimously.

Mr. George Lavington was then formally proposed and elected as a director, to fill Col. Daniel's place at the board, who retires. Mr. J. J. Lynch was also re-elected a director of the company. The auditor (Mr. D. Forrest) was also re-elected, and allowed three guineas for his services during the past year.

On the motion of Mr. SNELL the directors were voted 50 guineas for their services during the past year, to be divided amongst them in any way they might determine upon.

A vote of thanks was passed to Capt. Harvey for his able management of the company's property during the year. A vote of thanks was also passed to Mr. W. J. Lavington, for his attention to the interests of the company, and the practical manner in which he performed his duties. A vote of thanks was also given to the Chairman, for his courteous conduct in the chair.

The meeting was then declared Extraordinary, for the purpose of passing the following resolution:—"That the directors be and they are hereby authorised to issue the remaining 1000 shares, and that the same be issued at 20*s.* premium, to be paid for as follows:—1*l.* on application, and 2*l.* on allotment, and that the same be offered to the shareholders *pro rata*, and that, in the event of any shareholder not electing to accept such shares within such time as the directors may determine, the board be authorised to dispose of the same at 1*l.* premium, to such person or persons as they think fit, after having given the option to those shareholders who elect to take up their *pro rata* proportion in the first instance."

After a short discussion the motion was put and carried unanimously.

THE PHOSPHORITE COMPANY.

An extraordinary general meeting of shareholders was held at the company's offices, Queen-street-place, on Wednesday,

Major J. COPLEY WRAY in the chair.

Mr. GEO. H. TAYLOR (the secretary) read the notice convening the meeting, and the minutes of the preceding one, which were confirmed.

The CHAIRMAN explained that the sole business of the meeting was to confirm or otherwise the resolution passed at an extraordinary meeting held on Aug. 5. The resolution was to the effect that inasmuch as upon the allotment of the company's shares numbered 1 to 1000 (the vendors' shares) it was agreed between the directors and the allottees that the holder of such shares should only receive dividends in each year, after 10 per cent. had been paid on the remaining shares, it is agreed and declared that there shall be added to the regulations of the company that, in each and every year in which the profits of the company set aside for distribution shall be insufficient to pay 10 per cent. on the whole capital, then such profits shall be divided amongst the holders of shares other than those numbered 1 to 1000; then the shares 1 to 1000 are to receive 10 per cent., and surplus profits are to be equally divided. This arrangement is not to abridge the rights of the company to create preference or other shares, and the preference dividend is only to be paid out of the net profits of any one year. The shares 1 to 1000 are to be called deferred shares.

Mr. R. TAYLOR explained that at the general meeting there was certain business done which was quite within the power of a general meeting; but they also passed a resolution involving a change in the Articles of Association; and to give validity to this resolution an extraordinary general meeting became necessary.

It was then resolved, upon the proposition of the CHAIRMAN, seconded by Mr. SMITH, that the resolution (which was appended) should be confirmed: and the usual complimentary votes of thanks to the Chairman and directors terminated the proceedings.

For remainder of Meetings see to-day's Journal.]

FOREIGN MINING AND METALLURGY.

No striking feature has characterised the Paris copper market in the course of the last few days. Chilian in bars, delivered at Havre, has made 85*l.* 10*s.*; ditto in ingots, 91*l.*; and Corocoro minerals (pure standard), 89*l.* At Marseilles few transactions in copper have been noted. The state of the German copper markets has sensibly improved; holders show themselves more reserved, while the number of purchases have increased; prices have, in consequence, been somewhat firmer. There have been some few transactions in tin of late in Paris. Banca, delivered at Havre or Paris, has made 144*l.*; Straits ditto, 140*l.*; and English, delivered at Havre or Rouen, 142*l.* per ton. At Marseilles prices have been rather firm, and it would not be surprising to see them advance in consequence of the Dutch sale announced for this month. At this sale it appears that only 30,000 ingots will be submitted for competition. At Rotterdam, the tone of the tin market has much improved, although prices have not advanced materially. Banca is quoted at 78½ fls. to 71⅝ fls.; and Billiton at 77¼ fls. to 77½ fls. At Amsterdam, Banca has been very quiet; some lots have been dealt in at 78½ fls. The German tin markets have not experienced any sensible variation; nevertheless, in presence of the better tone of the English and Dutch markets, an improvement in affairs seems probable. Lead from various sources is quoted uniformly at Paris at 23*l.* 4*s.* per ton. Upon the German lead markets prices have exhibited great firmness. There has been little passing in zinc at Paris; Silesian is quoted at 27*l.* per ton, and a similar price is obtained for other good marks delivered at Havre. The German zinc markets have been quiet; at Breslau business has been inactive.

There is little fresh to report in the French coal trade. Abstention remains the order of the day among consumers, and the intelligence which comes to hand from the markets of the Nord at Paris seems to point to the probability of a decline in quotations. Belgian coal is neglected for English coal at Paris and in the western departments; a similar tendency is observed to a greater extent than hitherto in the northern districts. At the prices at which coal from Mons and Charleroi is selling at Paris coal merchants cannot realise profits, and important concessions in prices are accordingly necessary. A "syndicate" formed for the purchase of English coal is continuing its operations, and not without success. The consumption of coal appears to be declining for the moment in France; at any rate, this is the popular impression; and, as the production is increasing, it is thought that the present coal crisis will soon pass away. The committee of colliery proprietors of the department of the Nord proposes to increase to 680,000*l.* an advance which it intends to make to the State for deepening local canals. The committee has been negociating with the banking house of Erren Oppenheim, of Brussels, in order to secure an advance of the necessary funds. The French Minister of Public Works has had a conference with the committee, to which allusion has just been made. It appeared from the enquiries made that the basin of the Nord was doing all in its power to meet the requirements of consumption, and that the development of coal mining industry which had been effected in the district during the last few years might be continued if the necessary working staff could be proportionately increased. It was further stated that the committee was exerting itself to improve railway and canal communication, and that the general result of the efforts made would probably be a diminution in the cost price of coal to consumers. The French Association for the Advancement of Science has been also occupied with the coal question at Lyons, where it has been assembled. M. Ducarre, secretary of the Parliamentary Commission of Enquiry, has, through the medium of a long letter addressed to M. Quatrefages, called the attention of the society to this vital subject. Finally, the Council-General of the Saone-et-Loire has passed a resolution calling upon the Government to require the concessionnaires of unworked collieries either to abandon or to work their concessions.

A downward tendency in coal is remarked in Belgium, and has even become more decided during the last few days. The import of coal into Belgium, which amounted in the first six months of 1872 to 101,000 tons, rose in the first half of this year to 287,000 tons; the additional quantity of coal imported this year was principally obtained from the Zollverein. The exports of coal from Belgium, which amounted in the first half of 1872 to 2,320,000 tons, declined in the first six months of this year to 2,141,000 tons, showing a diminution of 179,000 tons this year; the reduction occurred principally in the exports to the Zollverein, the Low Countries, and France. On the other hand, the exports of coke from Belgium rose from 386,000 tons in the first six months of 1872 to 458,000 tons in the first half of this year. As there has been a considerable increase in the production of coal in Belgium this year, the Belgians must have had more coal available for home consumption.

In Belgium ironmasters are still waiting for favourable circumstances calculated to revive the iron trade, but these favourable circumstances do not yet present themselves, and we have not much to report this week. All descriptions of refining pig are dealt in at 4*l.* to 4*l.* 16*s.* per ton; prices are, however, very variable. The transactions concluded are unimportant, and this circumstance renders quotations unimportant also. Merchants' iron has maintained previous prices, having changed hands at 10*l.* 16*s.* to 11*l.* 4*s.* per ton during the last few days a slight revival in affairs has been noted. Old rails have been rather neglected, prices have been very variable, but the maximum has not exceeded 7*l.* 4*s.* per ton. Old rails may be re-made now with advantage. Plates have brought 14*l.* 16*s.* to 15*l.* 12*s.* per ton for No. 2; there is ample margin it will be seen, but the market has exhibited little animation. Casting pig is sustained with considerable difficulty, the current quotation of 6*l.* 8*s.* per ton is almost nominal. Scrap iron and machine iron have been a little better supported. However bad the state of affairs may be, upon the whole the future is not despaired of; it is hoped that a fall in coal and coke may restore courage, which has been a little shaken. The trade is passing through a period of difficulty, but still there are hopes that it may be overcome. The export movement, which is at present weak, is expected to revive in October—at least, on the side of Germany, the markets of which were last year nearly closed to Belgium. The imports of iron into Belgium increased to 108,000 tons in the first six months of this year, as compared with 78,000 tons in the corresponding period of 1872. The imports from England have increased this year. The exports of iron from Belgium have declined this year, having amounted in the six months ending June 30 to only 127,000 tons, as compared with 143,000 tons in the corresponding period of 1872; there was a sensible diminution in the first half of this year in the exports of iron from Belgium to England and the Low Countries.

A slight revival is reported in the French iron trade. It does not amount to much certainly, but these are times when ironmasters must be contented with comparatively little. Some furnaces which had been extinguished have been re-lighted, and some orders—of no importance, it is true—have restored confidence. Casting pig has revived, but orders for refining pig remain comparatively limited. In the Champagne district coke-made iron is maintained at 11*l.* 4*s.* per ton, but the demand remains nearly *nil*. Some transactions have been reported in chain, point, and machine iron. At Paris the state of the iron trade has not varied; the market remains quiet and heavy. In the Meurthe-et-Moselle group the quotation remains at the level at which it stood last week. In the Nord the quotation for iron has declined to 11*l.* per ton, without any revival in affairs having taken place. In the South of France a somewhat better state of things exists. The Creusot Works are assured employment, and the basin of the Loire is also working with activity; old contracts, however, are being worked out, and few new orders are mentioned. The Clairvaux and Villeneuve Works, in the Aube, have just been offered for sale. The Villeneuve foundry was purchased by the present

...ork, and the Clairvaux forge was acquired for 4820*l.* by M. Royer ...a Manoir. The Chatillon and Commentry Forges will pay on Sept. 15 ...balance of dividend for 1872 at the rate of 1*l.* 4s. 2d. per share.

FOREIGN MINES.

FLAGSTAFF (Silver).—Telegram from Mr. Maxwell:—"Ore hauled, ...stone; estimated value, 6200*l.*"

RICHMOND CONSOLIDATED.—Cablegram from the mine: "Hall, ...Gaskin.—Week's run, $35,000; re-lined furnace; working only two days.—Probert."

ALMADA AND TIRITO.—Telegram from Mr. Clemes: "July, profit ...month, $6412." Equal to 1288*l.* 5s. sterling. Profit for month after deducting ...mine expenses, 1162*l.* 8s.

SWEETLAND CREEK (Gold).—The directors have received the following telegram from their superintendent (G. D. McLean), Sept. 3:—"We have ...mined up, after a run of 36 days. The gross returns are—$17,500; the profit is ...$7,0. I send you a remittance of $10,500; run unfinished—no water."

RIO TINTO.—The directors have advice of the sale at Liverpool of ...tons of copper, and of the arrival there of 40 tons precipitate.

FRONTINO AND BOLIVIA (South American Gold).—The directors ...have advices under date July 11 and 13, accompanied by the usual accounts, and a ...remittance of gold, valued at 784*l.* 9s. 9d., the produce of the mines for the month ...ending June 20. The accounts for the month show a loss of 435*l.* 9s. 11d. Messrs. ...Petrago, the company's bankers, still write (July 11 and 12) hopefully about the ...mines. They are making further reductions in the salaries of the company's em...ployés, and have themselves reduced to 16*l.* per month the sum agreed to be paid ...them when they undertook the management of the company's affairs. They ...state that Mr. Pryor, who had just arrived from the Bolivia Mines, informs them ...that the mineral from the Zaragosita Mine was already improving, it having pro...duced 18 castillanos and 16 castillanos (5 ozs.) respectively during the two days ...previously to his leaving the mines.

ST. JOHN DEL REY.—The directors have received, per Tiber, the ...following report, dated Morro Velho, Aug. 1:—Sinking in shafts, July:

A.....	5 fms.	2 ft.	0 in.—Total depth.....	172 fms.	2 ft.	9 in.
B.....	6	2	1	„	172	5	7
Total ...	11 fms.	4 ft.	1 in.				

Being the largest sinking effected since the work was commenced.

DOM PEDRO.—Produce, weighed to July 29 (247 ozs.), 2142 oits.: ...from for month, 3400 oits. Letter from mine captains, dated July 28: The ore ...raised is of rather better quality than that obtained last month, and derived from ...No. 1 gully and No. 8 shoot; the samples from the former are very fair, but ...from the latter are of low quality. All works throughout the mine have, with ...the means for drainage, which are backward for reasons assigned in last ...month's letter, progressed very satisfactorily during the month. In our explora...tions nothing new has been discovered.—Stopes: In No. 4 gulley a large amount ...of ore has again been extracted from this point, and some good stroke work samples ...have been found, but the general samples may be termed very fair. The stopes in ...No. 4 shoot have yielded only very low quality mineral, which makes the returns, ...on the whole, moderate.—Prospective Work: The permanent incline has been com...menced to Vivian's shaft. The 30 fm. level cross cut has advanced very slowly, ...the surface water falling off, it being dry season. Otherwise we have nothing new ...to report on.

ROSSA GRANDE.—Extract from letter dated July 28: Bahu: The ...end in the bottom of the mine is opening out very satisfactorily. In the bottom of ...the 34 fathom wide, in the 38 east 4 feet wide, and in the 38 west 1 fm. wide; ...samples from these points show the lode to be of good quality. The lode in the ...(No. 2) in the bottom of the 19 west is producing very rich mineral, and dis...charging a great quantity of water. All other points are without change of im...portance since my last.—Cachoeira: The lode in the 20 east, at date, is 3 feet wide, ...showing good quality. The lode in the stopes in the back of the 19 east is 4 feet wide, ...yielding fair stamping work.

BESSBERG.—J. W. Hoffman, Aug. 30: This week we fixed the ...pump-breaker, completed the bridge from the inclined plane to the dressing floors, ...and laid the foundation for the steam-winch. The rails have arrived, and are now ...being laid throughout the dressing floors and on the bridge. In the open cast we ...are now getting carbonate from the north vein. Next week we shall go a meter ...deeper on this vein. The progress in the shaft for the week is 2 feet, and I ex...pect to be able to commence the 20 meter level about the middle of September. ...The production of ore for the week, 22½ tons carbonate of 40 per cent. assay, Deli...vered, 20 tons carbonate.

MENZENBERG.—August 30: Dickins's Shaft: We have been unable ...to keep the water this week as was anticipated, in consequence of having to make ...the bucket joints in place of the ones we unfortunately broke, but they are com...pleted now, together with the lengthening of the bucket rods, and we are at present ...engaged in dropping the pitwork, and as soon as that is done we shall again set the ...engine in motion. We calculate on having the shaft drained by Monday. While ...the smith was employed about the joints, &c., the shaftmen were busily engaged ...in sinking the shaft, in which good progress has been made. The pumps we bought ...from Arc are to-day being brought on to the mine. All other work is going on ...satisfactorily.

R. K. Roskilley, Sept. 2: We have forked the water in Dickins's shaft, and ...by to-day we have set the shaftmen (nine) to complete the casing of the same, put in ...timber below the 23, also to clear up the shaft, put in timber, and make it com...fortable at 40 fathoms, per bargain; this work will be finished this week, so that in ...the beginning of the coming week we hope to commence to sink the shaft, which ...will be pushed on with vigour. The engine and pitwork are in good condition, and ...working well.

[For remainder of Foreign Mines, see to-day's Journal.]

AUSTRALIAN MINES.

PORT PHILLIP AND COLONIAL (Gold.)—The directors have ad...vices from their resident director at Clunes, dated July 14:—The quantity of quartz ...raised during the four weeks ending June 18, was 510*l* tons; pyrites treated, ...nil; total gold obtained 1083 ozs. 8 dwts., or an average per ton of 4 dwts. 6 grs. ...Receipts were 1144*l.* 4s. 8d.; payments, 3512*l.* 6s. 1d.: profit, 631*l.* 18s. 7d.: ...debts which was last month's balance of 1031*l.* 14s. 4d., making a total amount of ...1825 11*l.* Of this sum 600*l.* was divided between the two companies, the Port ...Phillip company's proportion being 360*l.*; the balance, 135*l.* 12s. 11d. was carried ...forward to next month's account. During the two weeks ending July 2 the quan...tity of quartz crushed was 2085 tons; pyrites treated, 21 tons; total gold obtained, ...28 1 dwt., or an average per ton of 4 dwts. 12 grs.

ANGLO-AUSTRALIAN (Gold).—Capt. Raisbeck, July 14: I have the ...pleasure to report progress since 16th ult.—East Shaft: Since the above date we have ...cut the chamber east side of shaft at the 320 feet, 10 by 10 by 9 feet, and driven east ...10 feet. We have tapped the principal part of the water. There is still sufficient ...water not drained to annoy us in sinking, and will continue so until the chamber is ...timbered with timber. East drive from shaft 28 feet. Recommenced sinking on ...the 11th inst.; have sunk 1 foot; present depth of shaft 323 feet. In the prospect...ing shaft, south end of hill, we have sunk 19 feet, cut out chamber west side of ...shaft, and erected a whip, as a more economical and speedy way of raising the ...stone. We have passed through several leaders, but not sufficient stone to open out ...as yet; present depth 120 feet. In shaft north of Redhouse's claim, we have ...sunk 22 feet; we have passed through a series of promising leaders. At 150 feet ...have driven east on some 7 feet; the stone has improved in size and quality. I ...have seen gold in the stone; must extend the drive to ascertain the value of the ...stone; present depth of shaft 158 feet.—Mr. Lamb also writes, dated July 15: A ...week since I informed you of my having had an old shaft, north of our engine-...shaft, cleaned out and deepened. I am happy to say that we have now at 150 feet ...from surface struck some good-looking stone, and have seen gold in it; I believe it ...will prove remunerative. Before next mail we will crush a good trial from it. I ...consider the greatest faith in the western side of our lease, but the ground being so hard ...in the west shaft, quite prevents work there. In our financial position, if we make ...stone yield a profit from the eastern run of stone, it will be wise to go on sink...ing the western shaft. Directly I know that the 5000*l.* is raised I will have the ...cross-cut (220 feet) west shaft continued west to test this ground as well as ...east. In my last I informed you of our commencing crushing stone for the ...Bank Company, situate a mile south of us on the same line, western run, ...and I thought the stone would go at least an ounce to the ton—it went nearly ...two ton—143 tons crushed. Since that 36 tons more have been crushed, which ...is slightly over 3 ozs. per ton. I think it very likely that in a few months more ...we will be enabled to issue the remainder of the shares at par—that would place ...us in a splendid position for thoroughly testing the ground. With a little persever...ance I fully believe that you will have a first rate property.

AUSTRALIAN UNITED (Gold).—Capt. Anguir, July 15: During the ...last four weeks the works have been pushed on vigorously. We have extended ...the north drive 60 feet across the gutter. Face showing gold, and looks promising. ...I expect to extend the drive 50 or 60 feet more before reaching the eastern reef. I ...stated in my last report that at 300 feet east of north drive we had extended a drive ...100 feet north west. Since then we have driven 120 feet more, making a total of ...420 feet. I expect in the course of three or four weeks to have communication be...tween the two drives. Shortly after that is effected we shall commence to block a ...portion of the gutter. During the last month we had 1200 trucks of wash dirt ...raised, which yielded 42 ozs. 7 dwts. of gold. I hope by the next mail to report ...larger yields of gold.

SCOTTISH AUSTRALIAN.—The directors have advices from Sydney ...to July 12, with reports from the Lambton Colliery to the 10th. The sales of ...coal for the month of June amounted to 13,341 tons.

YORKE PENINSULA.—The directors have advices from the Com...mittee of Inspection at Adelaide, with a report from the Kurilla Mine, dated ...July 12, from which the following are extracts:—"Pending the action taken by ...the home board to raise fresh capital for the more vigorous working of the ...property, operations are now confined to tribute works. There are six men stop...ing in the back of the 25, east of Hall's shaft. * * * * * Since my last monthly ...report I have sold 43 tons 9 cwts. 3 qrs. of ore, averaging 10 per cent., and realising ...16*l.* The tributers have resumed work, but have not yet sent any ore to ...surface."

ENGLISH AND AUSTRALIAN.—The directors have advices from ...their manager at Port Adelaide, July 16: There was a large stock of coal at Port ...Adelaide, and three roasting furnaces, two smelting, and two refineries were at ...work there. The furnaces at Newcastle were also in full work. Since date of last ...advices about 280 tons of copper had been shipped.

A FINE SPECIMEN.—We were shown at the office of Judge J. B. ...Wyatte, Commissioner of the American Bureau of Mines, at Chicago, for the Ter...ritory of Utah, a magnificent specimen of carbonate of silver ore from the Winne...mucca Mine in Bingham Canyon. It has the appearance of a stalagmite formed ...on the bottom of a cave by the action of water. The sides consist of fluted columns, ...and the base is a mass of decomposed carbonates, as yellow as ochre, but extremely ...rich in silver. According to a test made by Mr. Foote, assayer of the Winnemucca, ...the price will go about 400 ozs. of silver to the ton. It was brought from the mine ...by Mr. Caldwell, and will be forwarded by him to the Chicago Bureau of Mines. ...On account of its rarity and beautiful appearance, it is valued at $100, and will be a fine acquisition to the cabinet of the Bureau. The Winnemucca contains almost every variety of ore found in the Territory. Native silver, pure copper, pyrites, sulphurets and carbonates ore taken out, and some of the rock has yielded as high as $22,000. The company is incorporated in England, and the stock stands well on the London market.—*Salt Lake Daily Tribune.*

CAMP FLOYD STAMP-MILL.—The following interesting items relative to the Camp Floyd Company's mill have reached us:—

"*Camp Floyd, Aug.* 12.—Knowing the interest you have ever manifested in the affairs of our several mining camps, I am sure you will be pleased to learn that the Camp Floyd Mining Company, which, owing to a variety of reasons, has been under a cloud, has started up its mill again, and is receiving ores from various mines in the neighbourhood, such as Lion Hill, Sunny Side, Queen of the West, and others. Under the management of your enterprising citizen, Mr. Henry Sewell, and his experienced assistants, Messrs. Beseler and Riotte, we hope to see this district again resume its place among the many favoured ones of the Territory. None is more easy of access, or has greater or better facilities for working at all seasons of the year, as the snow, which is such a drawback in many others, seldom interferes with mining in this camp.—FLOYD."

MEXICAN MINING INTERESTS IN ENGLAND.—Last week we stated that, at the meeting of the Esperanza and Puerto Mining Companies, and the representation of the Piedras Blancas negociation, it was resolved to give full powers to Superintendent Petherick to represent those interests in England. We had not then space to allude in detail to these interests or to Mr. Petherick's mission, which we will now do, as briefly as possible, consistent with their importance. Early after the conquest the attention of the Spaniards was attracted to the gold deposits of the Pacific Coast from the fact that various towns (pueblos) paid tribute to the Crown in this metal in its native state—dust and nuggets. Zacatula, near the mouth of the Mexicala river, was at one time noted for the quantity of gold extracted by its inhabitants from localities known only to themselves. Our attention was first turned in that direction by information furnished us several years ago by Major Robert B. Gorsuch, upon his return from the notable exploration of the River Mexcala, and since then everything that has reached us concerning the gold deposits of that region has confirmed us in the belief that Mexico will one day boast of her El Dorada, as does California. Mr. James H. Petherick, a practical Australian gold miner, has been actively engaged in the development of the gold veins near Coyuca, in the valley of the Mexcala river, for more than four years, consequently knows that region thoroughly. Some two years ago the Esperanza Gold Mining Company of Guerrero was organised, and later that of the Puerto, Mr. Petherick being named superintendent, and Major Gorsuch elected president of both negociations. We have, from time to time, called the attention of our readers to the flourishing condition of these pioneer enterprises; last year the field was discovered to be so large, the results on a limited scale so promising, and the importance of extended labour so clear, that the Puerto Company determined to empower Mr. Petherick to negociate a portion of that interest in England. Mr Petherick has been absent three months, and by the last mail writes from London proposing the consolidation of the Esperanza, the Puerto, and the Piedras Blancas mining enterprises under one organisation, with a nominal capital of 250,000*l.* sterling. All these properties lie upon the west bank of the Rio del Oro (river of gold), a tributary to the Mexcala, emptying into it at Zirandoro, which, by its very name, indicates that from time immemorial, the precious metal has been known to exist along its borders. The Piedras Blancas and Puerto properties were worked advantageously many years ago, as the records prove, but operations were interrupted by local revolution that, as will be remembered, existed for years in Guerrero from personal feuds between military and political chiefs, which feuds have now for ever ended by death of the leaders, and the causes that produced them during the early history of the Republic can never exist again. If the interested parties here determine to combine interests, and Mr. Petherick succeeds in closing arrangements in England, the results that may be produced with the capital that will then be disposable, under such able management as has already been displayed in these enterprises, must be very advantageous to all directly concerned and the country at large. We wish Mr. Petherick the success he deserves for the energy he has displayed and the integrity he has shown throughout his connection with these enterprises.—*The Two Republics:* Mexico, July 19.

TYLLWYD SILVER-LEAD MINE (LIMITED).

The fact a mine having been productive in the past, is generally a guarantee for its value in the future. This, like all other general rules, may have its exceptions where the property has been worked out—such cases are rare. They do not, of course, exist where modern appliances have not been called into requisition. In these instances the amount extracted must have been limited to what was possible under the old system. Operations must have been confined by the means at the disposal of the miners, not checked by the lodes giving out. Depth and water were enemies which our predecessors of a generation ago were unable to overcome. Modern inventive genius has vanquished these foes. It asks only for money to accomplish its task. As a consequence, mines which had been abandoned offer the most eligible opportunities for the exertion of modern enterprise and the investment of modern capital. The labour previously expended is so much cost saved in developing the lodes. It enables the adventurers of the present day to take up affairs which are a certainty. They have not to search in the dark for the point at which to commence operations, as they must in opening out entirely new mines. Under any circumstances it is much less difficult to arrive at the value of a property which has been proved than at that of one on which nothing has hitherto been done. In case of the Tyllwyd Silver Lead Mine, the immense heaps of halvans left by the old men, tell of the profits which were made in by-gone times, as the surface workings show from where they were extracted. No machinery, however, had ever been erected at the period when these ores were brought to surface, of which the halvans are the refuse; it was then unknown. Hand pumps and winches were the only mechanical agents. Since then a few gentlemen of small means got the affair in their hands; their efforts were cramped from want of capital; they had no machinery for any purpose, and could go to no depth below the surface. The late well-known Capt. Matthew Francis had a share in the enterprise, and directed their operations. Everything in the mines down to the dressing of the ore was performed by hand. Notwithstanding this most costly mode of proceeding fair profits were made. Capt. Francis always regretted his inability to work the property in a suitable manner, stating his firm conviction that could he do so it would become one of the leading mines in the district. This opinion, the result of actual observation and experiment, he expressed to his friends, and the record of it now exists as evidence in favour of his pet scheme. Reports made by well-known mining engineers, such as Messrs. W. Eddy, A. Francis, John Williams, George Evans, Samuel Nicholls, and R. Harvey, fully concur in supporting Capt. Matthew Francis's view, and the result of the operations of the company which has latterly purchased the mine leave us no doubt of their correctness. Capt. Harvey, who visited the property so lately as June 4 last, speaks of it in the most glowing terms, and finishes the report with the words, "I cannot but add, in conclusion, that this mine will, in my opinion prove a great success, and richly reward its fortunate possessors."

The entire size of the sett is about ¾ mile in length, with a breadth of ½ mile. It is traversed by three well defined lodes, denominated respectively the south lode, the middle lode, and the north lode. The stratum in which they are embedded is clay slate, identical with that of the surrounding rich mines, Frongoch, Goginan, and the Lisburne Mines. The lodes themselves run in an eastward direction into a hill some 800 to 900 feet high. The first, the south lode, has been attacked at the base of this hill by means of a level driven east on its course for about 30 fathoms. From this a large amount of ore has been extracted without the aid of machinery. The old men, however, in working at the bottom of this level were forced to abandon it from the amount of water they encountered, which was too strong to be overcome by manual labour. In this portion of the property the ground may, therefore, be considered virgin, and the new engine shaft now being sunk will doubtless lead to most valuable deposits. The middle lode has already yielded large returns, and as when it was worked there was no machinery for dressing the ore, it must have been rich to pay the costs and return profits. It promises exceedingly well. The north lode has as yet been little more than opened upon; but as it is from 3 to 4 ft. wide, and in the level driven in it may be seen now sparkling with lead on all sides, there can be no doubt this will prove a most valuable portion of the property. The halvans themselves, having been laid aside at a time when the science of metallurgy was comparatively in its infancy, contain still a large quantity of lead ore, and, as in the case of the heaps of refuse left by the miners of the time of the Romans, will well reward a more careful treatment. Besides the mineral wealth stated, the Tyllwyd property possesses peculiar advantages of position, not only with regard to facilities of transport, but also of water-power. It is situated in the heart of the richest mining district of Cardiganshire, at a distance of about 7½ miles from the flourishing port of Aberystwith, to which there is an excellent high road. The River Rheidol flows along its southern boundary, furnishing an unceasing supply of water-power for all the purposes of the mine. There will be, therefore, no necessity for the introduction of steam, and the immense costs of fuel will be saved for all future time. This last consideration, with the present high price of coal and its increasing scarcity, is a matter of the greatest importance, and may almost make the difference between a dividend paying and non-dividend paying mine. The sum, besides, required for the development of the mine is very much less than if it were necessary to purchase steam machinery, instead of having simply to make a short lect and erect a water-wheel.

The work at the mines is reported on all sides to be progressing most favourably. Already the size and richness of the lodes have been demonstrated. In every quarter the brightest promise for the future is afforded, and the moment is looked forward to with anxiety when the shaft shall have been sunk to a sufficient depth to permit of the south lode being vigorously worked, when it is generally admitted immense results must immediately follow. The buildings, which are so essential to the success of any mining undertaking are now fast approaching completion. The peculiar conditions of the building trade have prevented their being proceeded with as rapidly as might have been desired, but the energy, good management, and economy which have been brought to bear on the development of this property have overcome the difficulties. The pit for the water-wheel is also advancing rapidly, and a very short time must now only elapse before the whole affair comes into regular working. So soon as it shall be so hand-some dividends will be secured. This is certain, not only from the great mineral wealth of the property, but from the fact that the capital is so small, though amply sufficient, that even very small returns would pay great profits. It is not necessary that a property should send out very large quantities of ore to give a heavy percentage on 12,000*l.*, nor would so small a sum be sufficient were it not for the exceptional conditions of the property. In conclusion, there are few shares in the market which hold out such certain promises of success, and it is not to be doubted that before many months are over its shares will be quoted at a premium of many cent. per cent. It has, further, the advantage of being within the reach of all purses from the moderate price of its shares, and affords a fair opportunity for the investment of spare cash, with the prospect of rapid and steady gains.—*Harland and Co.'s Circular.*

WITH THE RISK GREAT, AND THE REMEDY SIMPLE, who is justified in neglecting defence against epidemics, which not only work dismal havoc in close streets and crowded quarters, but boldly intrude into higher circles? Holloway's medicaments boldly face the evils they profess to remedy: local relief and general purification progress together; the diseased portion is cured—the foul whole is cleansed. Holloway's ointment rubbed on the throat and chest also exercise the most beneficial influence over sore throats, diphtheria, and cough, whether resulting from catarrh, asthma, or bronchitis. This unguent is equally potent in preventing or arresting the worst results of chicken pox, small pox, measles, scarlatina, whooping cough, and many other ailments attacking infancy, and endangering the early years of life.

IMPORTANT TO CAPITALISTS.

A few years ago a dividend of 6 per cent. per annum was considered the acme of interest on investments, and those who hitherto had been content to receive their 2½ or even 3 or 4 per cent., wondered how in the name of goodness 6 or even 7 per cent. could possibly be paid. Nay, they had a settled idea that anything over 5 per cent. was usury and illegal. They had heard of joint stock banks and some extraordinary stock paying 8 and sometimes even 10 per cent.

Of the enormous profits of commerce and of mining in all its branches they had but a very faint conception, however occasionally the monetary world was seized with a panic to obtain shares in some extraordinary mining adventure whose explorers had found the much coveted and desired lode of copper, tin, or lead, which would, and did reward the adventurers, a thousand, aye, five thousand, fold for their confidence in the undertaking. Nor was it until the new and wise act of our legislature creating "limited liability," that the holders of capital began to awaken from the dormant feeling of being content with a nominal income. They saw their neighbours suddenly becoming rich, and over-stepping them in the monetary world. Nay, they even heard them discuss shares and stock as if they had been brought up to it all their lives. Nor could they believe that their venturesome friends had realised a fortune by risking a paltry £10 or £20 note. Yet such is the fact.

Let us refer for a brief space to a few notable instances, commencing with the Devon Great Consols. This company, with only 20s. per share paid up, returned to their subscribers up to last summer dividends amounting to nearly £1200 per share, and it is a notable fact that the shares sold for as much as £500 each, and even last year commanded £100 each; yet the shares were once sold for a mere bagatelle. Never was there a greater verification of the old adage:

"When shares are high the public buy,
When shares are low they let them go."

Wheal Basset, situated in Illogan, with £5 2s. 6d. paid up per share, have returned to each share in dividends £638, and now realise over £40 each.

South Caradon, with a paid up capital of 25s. per share only, have returned to the proprietors over £700 each share, and are now commanding upwards of £100 per share in the market.

Minera Mining Company, Wrexham, with £5 paid, have received over £80 each share in dividends, and the market value is now nearly £30 per share.

Lastly, the Van Mine, in Llanidloes, with £4 5s. paid, are commanding over £40 per share.

But go where we will in any mining district, and we have abundance of evidence of the numerous fortunes that are continually being made out of mining investments, whether it be coal, copper, lead, tin, or iron.

With the foregoing remarks, we now draw the attention of our readers to a new undertaking for working a valuable property on the celebrated Halkin Mountain, near Holywell, in Flintshire, and called

THE LADY CONSTANCE

Lead Mining Company (Limited), whose prospects of gain are certainly second to none in the kingdom. It appears to be no speculation whatever, as the miners have already been sending to the surface as much as 45 tons of ore per month, and there is now several tons at grass, ready for dressing, and an enormous weight at the bottom of the shaft (see reports in prospectus). We have no hesitation in prognosticating a great future for Lady Constance Mine, which is being brought out under the auspices of Messrs. Grosvenor and Co., the eminent firm of Manchester sharebrokers.

We have their authority for saying that their principal has minutely inspected the property of the above company by going into the workings, and examining the ground in all directions, and they are assured, in all their varied experience of mines, they have seldom seen a finer or greater ore-producing sett.

THE LADY CONSTANCE LEAD MINING COMPANY (LIMITED).

Incorporated under the Companies Acts, 25th and 26th Vict., cap. 89, and 30th and 31st Vict., cap. 131.

Capital £40,000, in 40,000 shares of £1 each, payable on application.

Share Warrants to Bearer will be issued, under the provisions of "The Companies Act, 1867," which pass from hand to hand like a bank note, and by which all trouble and expense of making and registering transfers will be avoided.

Such shares can, under no possible circumstances, be liable to any future call or liability.

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JAMES HOWARD REDFERN, Esq., Stretford-road, Manchester.
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AUDITORS.
Messrs. NICHOLSON and MILNE, Public Accountants, Norfolk-street, Manchester.

BROKERS.
Messrs. GROSVENOR and CO., 88, Portland-street, Manchester.

MANAGING DIRECTOR.
JOHN HOSSACK, Esq., Engineer,
(Messrs. Shaw and Hossack, Engineers, Openshaw).

SECRETARY.
Mr. BATES CRITCHLOW.

PROSPECTUS.

It is an historical fact that the Principality is one of the most prolific fields from which the United Kingdom derives her vast mineral resources (which are now returned by Her Majesty's Government at over 43,000,000 sterling per annum) and to which her present greatness amongst the nations of the earth may be traced. Enormous fortunes have been, and are now being, made by those who judiciously invest in mining operations. Many of the colossal fortunes of the present day have been derived from a nucleus formed by an investment in an undertaking for the discovery of the precious metals. For instance, the Right Hon. Milner Gibson, the Right Hon. John Bright, and Richard Cobden, Esq., whose connection with Dyliffe Mines is well known. Many a coronet now in existence can be traced to the same source. That prolific mine, the Van, whose shares could, a little while ago, have been bought for a few shillings, are now quoted at £40 each. History records numerous instances of such gains being made by mining that no other branch of industry can hope to equal or even attempt to approach.

Halkin Mountain has long been known as the depositary of enormous mineral wealth, and the number of both private and public mines now in full operation, and yielding very large returns (to wit, the Great Prince Patrick, which in a few years yielded over one million sterling to its fortunate subscribers) fully bear out the assertion. It is situated in Flintshire, and rises some 700 or 800 ft. above the level of the sea; the distance from the far-famed Holywell being about 1 mile, or 2½ miles from the railway station of that name.

The Lady Constance Lead Mining Company (Limited) has been constituted for extending the works now going on, and for erecting the necessary dressing and other machinery for cleansing the lead ore raised from all that piece of highly metalliferous ground known as the Pwllmelyn and Pwll-y-gaseg mining setts, situated on Halkin Mountain, in the parish of Ysceifiog, near Holywell, in the county of Flint.

The area of the sett is almost one mile on the course of four massive and well-known lodes, for particulars of which see the reports accompanying the prospectus of gentlemen of world wide celebrity and sterling practical knowledge. These four famous lodes are crossed by six other famous and well known ore yielding lodes, on the junction of which two shafts have been sunk to a depth of 20 fms. each. The first shaft, known as Morris, Williams, and Robert's shaft, is only of small dimensions, and not fit for thoroughly working the lodes; nevertheless, the above-named men succeeded in raising from 40 to 45 tons of lead ore per month during the sinking thereof until the timbers gave way, and it fell in. It has, however, now been thoroughly repaired, and during such repairs several tons of ore have been brought to the surface, where it can now be seen. The second shaft, known as Katie's shaft, is a proper sized and substantial engine-shaft, and quite adapted for machinery (which is now in course of erection). The distance between the two shafts is about 20 yards, and a level from one to the other will be driven. A level has been driven at the bottom of the small shaft, which produced great masses of ore. This likewise fell in, but is now being thoroughly repaired, and when complete it is expected a junction of lodes will be opened out, and lead ore sent to the surface daily.

This valuable property is held under the Most Noble the Marquis of Westminster, at a royalty of 20s. per ton of best ore, and 10s. per ton of all inferior ores; no dead rent or surface damage, the above including all dues.

The directors desire it to be particularly understood that they are of opinion that an investment in the Lady Constance Company (Limited), will amply satisfy the most sanguine of expectations, being themselves satisfied that the undertaking is no mere speculation of ordinary adventure, but a sterling and substantial work, that will yield an extraordinary profit.

The following are the particulars as to date and names of parties to the only contract entered into by the company; agreement dated the 13th day of July, 1873, between the Reverend David Jones, of the one part, and Robert Charles Sharp, Esq., on behalf of the Lady Constance Lead Mining Company (Limited), of the other part.

So satisfied are Messrs. Grosvenor and Co., that this is one of the good things rarely offered to the public, that they strongly advise their clients and friends to at once apply for shares, as they believe that in a very short time they will quadruple in value, and that dividends equal to 50 per cent. may be fully relied on.

Applications for shares, accompanied by a remittance of £1 per share, to be made to the secretary; or the brokers, Messrs. Grosvenor and Co., sharebrokers, 88, Portland-street, Manchester.

CORNISH MINING.—To show the importance of consulting practical authority, I have only to draw attention to the following fluctuations during the current year, and as the various companies are most loudly advocated when at their highest range the uninitiated more especially should act on independent authorities. As a rule, market dealers and brokers are the worst advisers, for they are very often wholly influenced by the surface currents of events. Consultation free, or Selected List of Securities, 5s. Attendance 12 to 3 o'clock.

Dolcoath, from £67½ down to £55, and dividends from £10 12s. 6d. annually to £1 quarterly: Tincroft, from £2 to £1½ quarterly, and the price of shares from £57 to £5; Trumpet, from £14 to £10 and £12; Van Consols, from £9 to £8; Providence, from £20 to £10 and £11; West Frances, West Seton, Cook's Kitchen, Devon, North Levant, Wheal Basset, South Condurrow, and Herodsfoot, from dividend to non-dividend mines, and, in instances, greater fluctuations have transpired. Each of these mines present different and peculiar features, which those practically conversant with mining can alone explain. Every information and data supplied to intending investors by—

RICHARD TREDINNICK,
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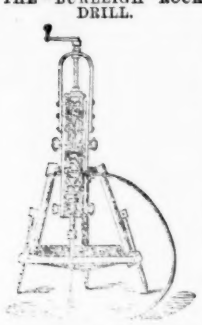
THE "BURLEIGH" ROCK DRILL.



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This celebrated ROCK DRILL, which by reason of its inherent merits has superseded all other Rock Drills, is now in extensive use in America, England, Scotland, and the Continent, and is indispensable in the economic working of all Railway Cuttings, Shafts, Quarries, and Mines.

Its prominent features are:—

I.—ITS SIMPLICITY.

Any labourer can work it, and it does not get out of order. It may be worked either by air or steam power, at will, without any alteration of the mechanism.

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No part of the mechanism is exposed; it is all enclosed within the cylinder—so there is no risk of its being broken.

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In hard rock, like granite, gneiss, ironstone, quartz, the Tunnel Drill will progress at the incredible rate of 6 inches to 12 inches per minute. These machines can bore holes from 1 inch up to 5 inches in diameter, and, on an average, will go through 120 feet of rock per day—making 40 holes each from 2 to 3 feet deep. The drill can be used at any angle, and in any direction, and will drill and clear itself to any depth up to 20 feet.

IV.—ITS ECONOMY.

As compared with hand labour the saving in actual drilling is very considerable, from the fact of the "out put" being increased fourfold. The saving in the general expenses, and in the interest of capital, will be in a like ratio.

DRILL POINTS.

The saving in steel alone is incredible. ONE DRILL POINT WILL GO THROUGH TWENTY FEET OF ABERDEEN GRANITE WITHOUT SHARPENING. This fact will be duly appreciated by practical men.

For testimonials, estimates, and other information, apply to—

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For driving the "Burleigh" Drill, or other Machinery.

The peculiar advantages which enhance the value of this Machine in the estimation of those who have it in practical use are—

1.—The pump pistons are driven by a steam-engine, the connection rods being attached to one crank shaft, the angles being so set that when the greatest power is developed in the steam cylinder the point of the greatest compression is being reached alternately in the air cylinders.

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Messrs. T. BROWN and Co., ENGINEERS, have much pleasure in calling attention to their IMPROVED MACHINERY for STONE BREAKING and QUARTZ CRUSHING, for crushing, grinding, triturating Stone, Flint, Minerals, Ores, Chemicals, and other substances; for washing and separating Metals from Ores, and for extracting Gold from Quartz.

The principle of this invention is applied to machines of various construction, which contain within the range of their capability the power of reducing all hard materials to cubes of from 2½ inches to impalpable powder. The mechanical construction of each description of machine is specially adapted for its own peculiar work, and experience has shown that each is eminently suited for the work which it is designed.

They can be driven by water, steam, or horse power; they are light and portable, and their crushing and grinding surfaces are constructed that when worn they can easily be replaced.

If intending purchasers would send a sample of the material required to be crushed or broken it could be operated upon in their presence, and thus they would be guided in the selection of the machine best suited for their requirements.

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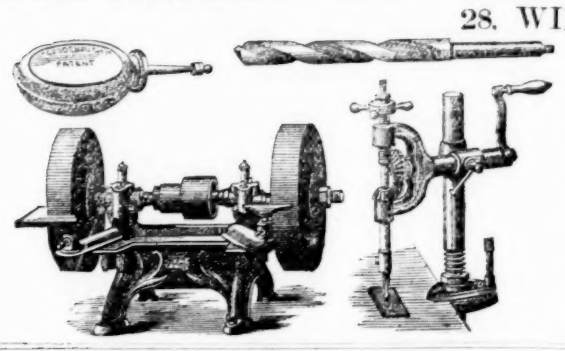

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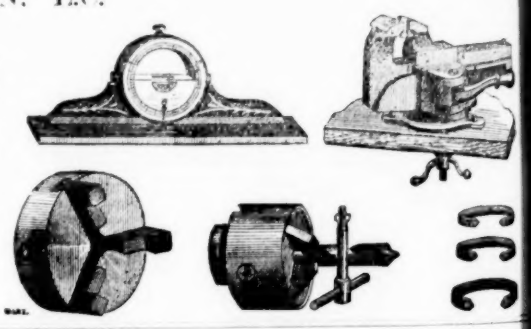
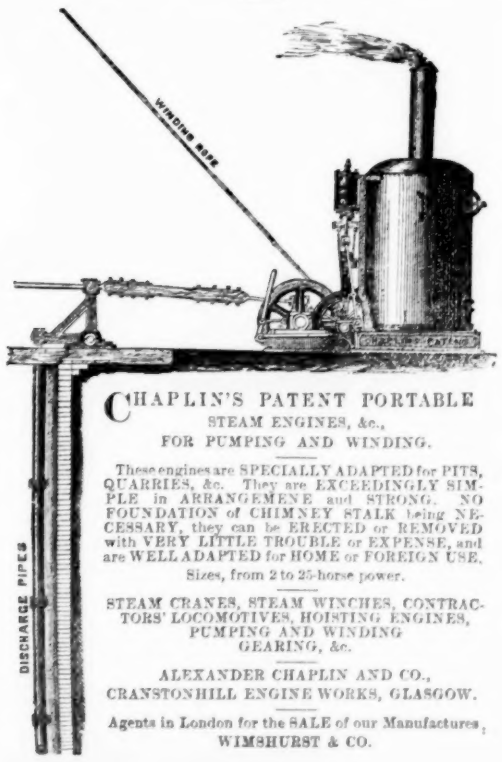


Prize Medal—International Exhibition, 1862.



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These engines are SPECIALLY ADAPTED for PITS, QUARRIES, &c. They are EXCEEDINGLY SIMPLE in ARRANGEMENE and STRONG. NO FOUNDATION of CHIMNEY STALK being NECESSARY, they can be ERECTED or REMOVED with VERY LITTLE TROUBLE or EXPENSE, and are WELL ADAPTED for HOME or FOREIGN USE.

Sizes, from 2 to 25-horse power.

STEAM CRANES, STEAM WINCHES, CONTRACTORS' LOCOMOTIVES, HOISTING ENGINES, PUMPING AND WINDING GEARING, &c.

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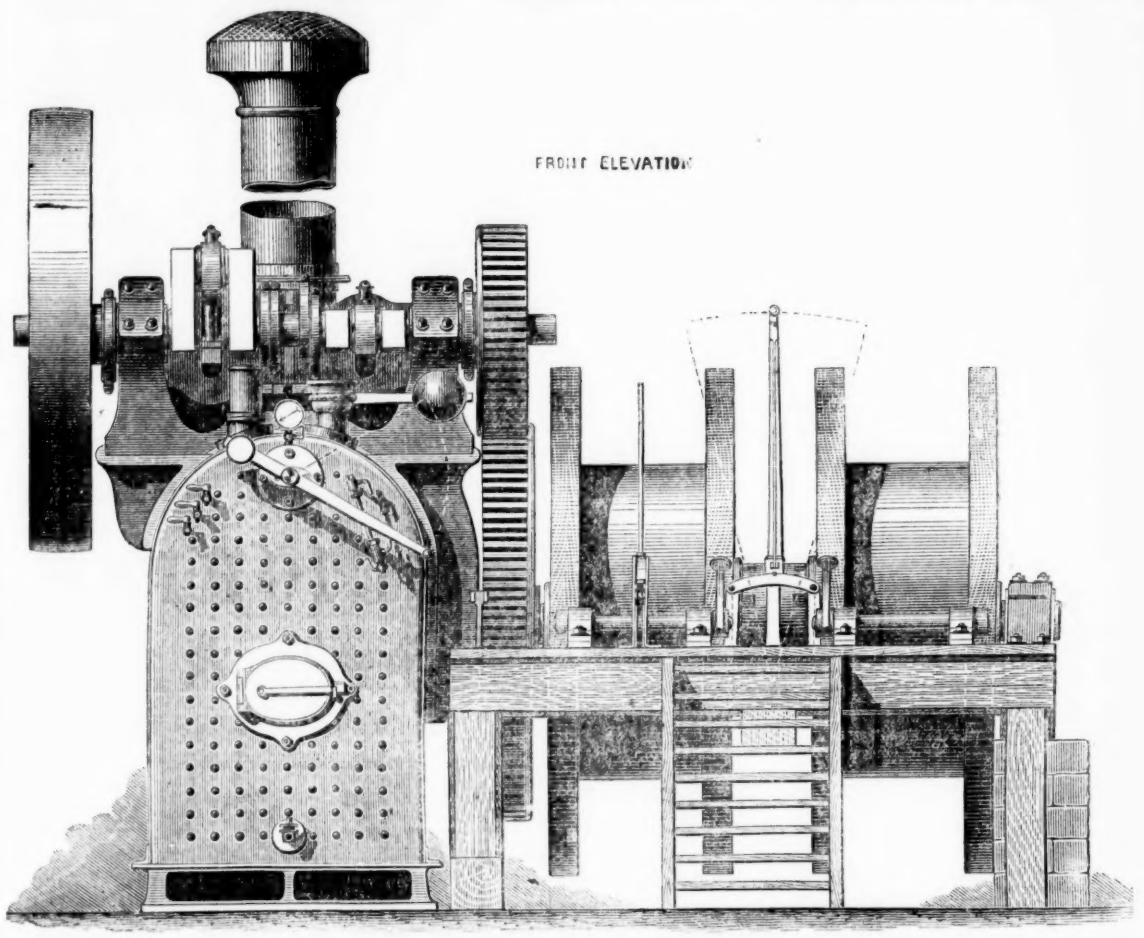

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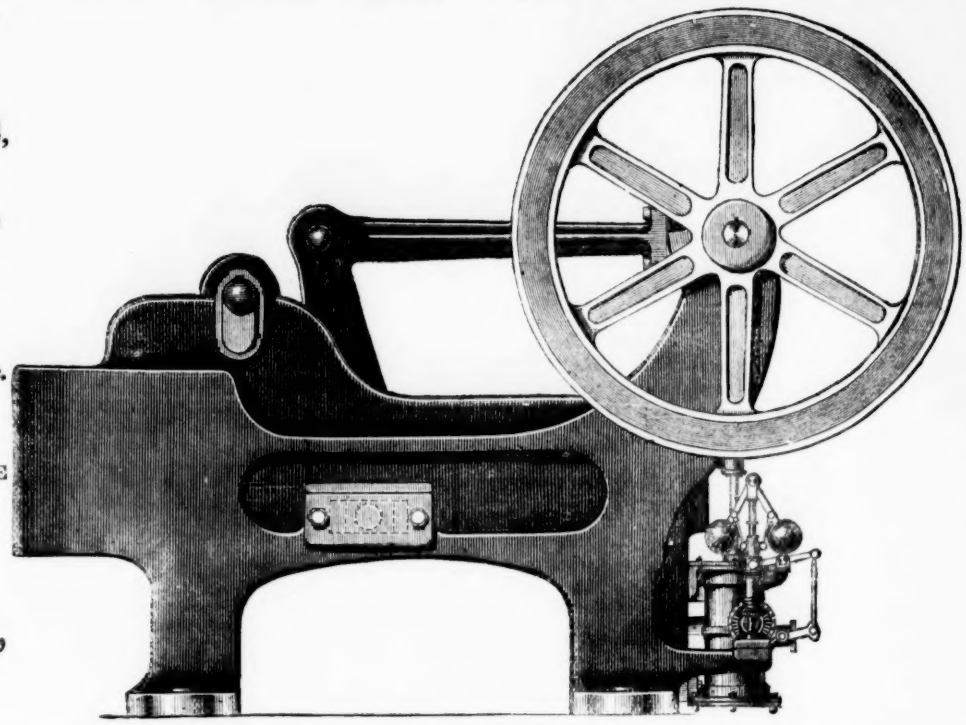

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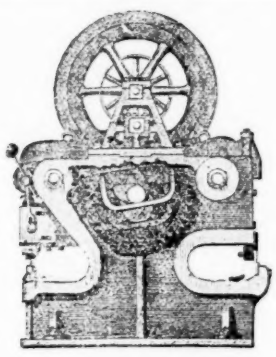

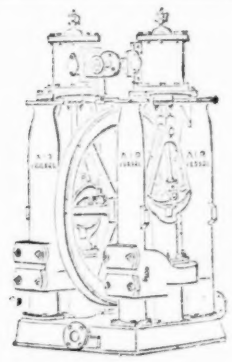

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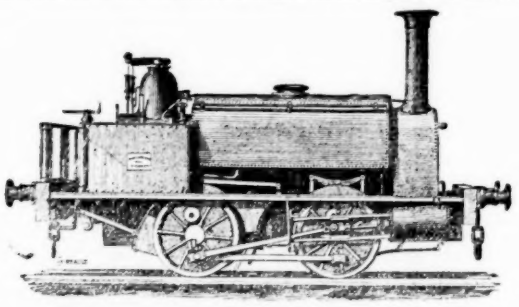

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